

# THE IRON AGE

THURSDAY, AUGUST 13, 1891.

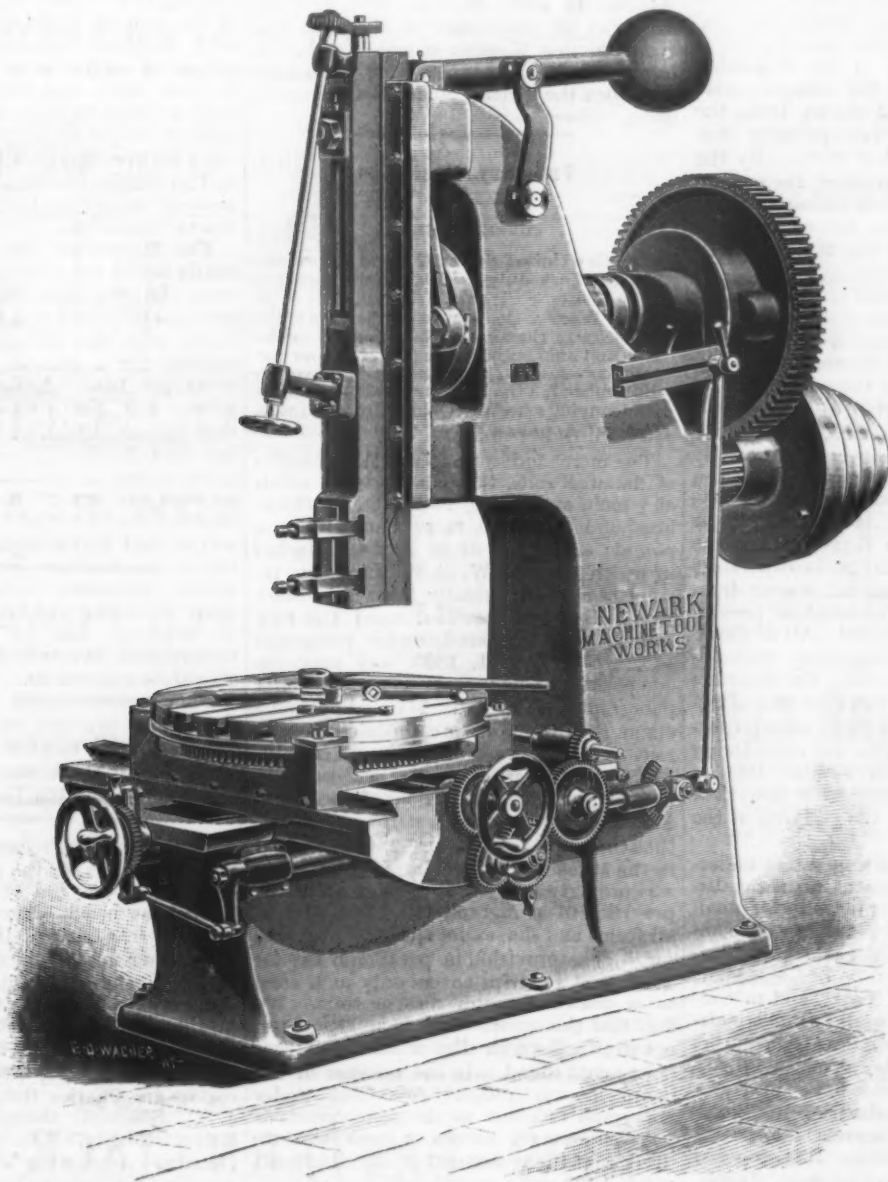
## Slotting Machine.

The Newark Machine Tool Works of Newark, N. J., have been building for several years a 13-inch slotter, but have added the various modifications dictated by actual service, which have brought it to the present design.

The frame is wide and heavy, to insure stability and to prevent spring. The ram is driven by the four speed cone and the gearing. The Whitworth "quick return"

circular table may be held rigidly by the clamps in the four corners. All the handles are within easy reach of the workman. This is a very important feature, as work on the slotter requires close watching by the workman, who should be able to operate all the handles without stopping the machine. All wearing surfaces are broad and scraped to a perfect bearing. All wearing screws and spindles are of steel. Countershaft and wrenches are included with the machine.

struct at West Superior for lake service during the World's Fair. The new boat will be 450 feet long. The house or cabin for passengers will be raised 8 feet from the main deck on turrets 30 feet apart. The cabin begins 80 feet from the bow and extends to within 50 feet of the stern, being the full width of the ship. It will be two stories in height, with the main saloons extending to the top. McDougall's idea is the same with this as it is with other whaleback boats. He believes that



SLOTING MACHINE, BUILT BY THE NEWARK MACHINE TOOL WORKS.

gives a quick upward and a slow cutting stroke to the ram. The stroke can be varied from 0 to 13 inches, and the change is quickly made by means of a screw in the crank disk. The position of the ram in regard to the work may also be quickly changed by the rod which is shown on the front of the ram. The counterbalance takes up the lost motion in the crank pin. The compound table is provided with a circular table, driven by a worm wheel and gear, with self acting feeds in both directions, and the feed takes place always at the top of the stroke and never during the cut, and it may be changed from fine to coarse by the feed crank. The

The principal dimensions are: Large cone step, 36 inches by 44-inch face; ratio of gearing, 1:4; circular table, 31 inches diameter; compound table feeds, 21 inches longitudinally and 27½ inches across. Machine will slot the center of 57 inches. Distance from tool seat to inside of frame, 27 inches; from circular table to frame, 19 inches; length of ram, 4 feet 4 inches; weight of machine, 10,000 pounds.

**Whaleback Boat for the Fair.**—The strangest looking boat built in recent times will be the big whaleback passenger steamer Alexander McDougall is to con-

in a seaway the waves will roll over the turtleback, but will not meet with resistance in striking the house. In this way a great saving of motive power will be affected. It might be thought from this description that the new boat will be an awkward looking affair, but in the paintings from drawings now in the office of the shipyard at Superior she gives promise of being a trim-looking craft. In pleasant weather a long promenade is given on the main deck underneath the house, and there will be many other pleasant places around the ship in good weather. It is estimated that accommodations for 2000 passengers will be given on board, as the cabin is

to be 320 feet long. There seems to be no doubt about the construction of the boat and the plans have all been prepared.

### The Pan-American Transportation Company.

The directors of the Pan-American Transportation Company held a session of several days' duration in Chicago last week. The preliminary organization, which was in contemplation from the time the first reciprocal treaty was made, was effected at Mobile, Ala., last June, the deep-water convention which resulted in an appropriation of \$6,200,000 being in reality a preparatory move looking to the establishment of steamship lines which should absorb the carrying trade between the United States and South America. Many of the incorporators were leaders in obtaining the passage of the Steamship Mail Subsidy bill. As the company were chartered under the Alabama laws, the first meeting of the incorporators was necessarily held in that State. By the terms of the charter, however, the general offices are to be located in Chicago, which it is intended to make the central distributing point for all the South American products.

The business transacted at the meeting in Chicago was not made public in all its details. A constitution and by-laws were adopted, but important measures were considered which have not been disclosed by the directors. They give as a reason for this secrecy that it is unadvisable to talk until after the September meetings, by which time it is expected that the question of a subsidy to their company will be settled, and they hope favorably. It is claimed by the officers that their scheme is amply backed, and that the incorporators who tried to obtain a national charter from the last Congress represented personally a capital of \$25,000,000. All of these, however, were not among those who obtained the Alabama charter. The directors will not state who the backers are, alleging that the publication might aid a powerful railroad company who are considering the establishment of a similar line of steamers and competing with the Pan-American company for the carrying of the mails.

It is hinted that even so great an undertaking as the establishment of eight distinct lines of steamships plays but a small preliminary part in the plans of the company. They have, under their charter, the right to obtain all sorts of concessions from governments and States, and to construct and operate lines of railroads, telegraph, cables and telephones. The officers indicate that eventually, by means of concessions, they hope to have nearly a monopoly of these industries in South America. No steps, however, have yet been taken in this direction. It is proposed to have three lines running from Galveston, three from New Orleans and at least one each from Tampa and Mobile, but no arrangements have been made for ports of entry in South America. The officers state that they will shortly send some one to South America to arrange these matters.

The claim was originally made that 20 steel steamships would at once be constructed by the company. It now appears, however, that it is intended to use a portion of the first \$1,000,000, which the treasurer claims is almost all paid in, for the purchase of second-hand vessels of the second grade. It will be determined afterward whether or not they will construct any vessels of the first grade. The charter provides for a capital stock of \$10,000,000, which may, by vote of the stockholders, be increased to \$100,000,000.

The officers of the company are: President, J. B. Clarke of Chicago; vice-presi-

dent, H. C. Ruttan of Chicago; secretary, F. L. Duna of Galveston; treasurer, Dr. W. O. Kulp of Davenport, Iowa. These and the following constitute the board of directors: A. P. Chamberlain of Des Moines; A. Gray of Chicago; Howell Jones of Topeka, Kan., and A. S. Penn and Gaylord Clark of Mobile. They are confident that the establishment of the lines they contemplate will result within one year in the possession by the United States of a carrying trade equal to that of any nation on earth. To Chicago the project is thought to be of enormous importance, all of its industries being affected to some extent, and the packing interests and flour trade being given practically a monopoly of the South American trade. The annual meeting of the company will be held in Chicago on the first Monday in June of each year, and the meetings of the board of directors will occur the first Monday in each month. It has been decided to look for a location and open the general offices in Chicago at once.

### Treasury Decisions.

#### CORSET STEEL.

Before the United States General Appraisers at New York, July 8, 1891. In the matter of the protests, 8871, 8872, 8873 and 8874 a, of R. H. Wolff & Co. against the decision of the Collector of Customs at New York as to the rate and amount of duties chargeable on certain corset steel, imported per Wyoming, November 7, 1890, and vessels named in accompanying schedule. Opinion by Wilkinson, General Appraiser.

The merchandise consists (1) of bundles of flat steel rods, the rods having a width of  $\frac{1}{4}$  inch, and being 13 W. G. in thickness, and valued at more than 3 cents a pound; and (2) of strips of steel 5 inches in width and 27 W. G. in thickness, invoiced and commercially known as corset steel. Duty was assessed upon the rods at  $1\frac{5}{8}$  cents a pound, under paragraph 146, act October 1, 1890, and upon the corset steel at  $1\frac{5}{8}$  cents a pound, under paragraphs 146 and 144. Appellants claim that the rods are dutiable as wire rods at  $\frac{1}{8}$  cent a pound, under paragraph 147, and the steel at 50 per cent. ad valorem, under the provisions of paragraph 148, for sheet steel in strips. We find that the rods are not wire rods, and that in the absence of a specific provision, duty was properly assessed upon them under the provision of paragraph 146, for "steel in all forms and shapes not specially provided for." The provision in paragraph 148 for sheet steel in strips covers only such steel as is drawn through dies or rolls. We find that the corset steel in question was not drawn through dies or rolls, and that it was cold rolled. In the opinion of the board it was properly classified under paragraph 146, but as the merchandise is not commercially known as sheet steel, we think that the assessment of the additional duty of  $\frac{1}{8}$  cent a pound under paragraph 144 was erroneous. With this exception the Collector's decision as to both articles is hereby affirmed.

#### STEEL WIRE ROPE.

Before the United States General Appraisers at New York, July 6, 1891. In the matter of the protest, 5910 a, of John W. Mason & Co. against the decision of the Collector of Customs at New York as to the rate and amount of duties chargeable on certain wire and steel rope, imported per Alaska, October 14, 1890. Opinion by Somerville, General Appraiser.

Since our decision of the 11th ult. in this case our attention is directed to the fact, as shown by the papers, that the duty of 45 per cent. ad valorem was first assessed by the Collector on the wire and steel rope as completed articles of manufacture, instead of on the wire from which these articles were made, and that the ad-

ditional specific duties were then added to this ad valorem duty, as authorized by paragraph 148 of the new tariff act. This was erroneous under the rule laid down in the opinion, and the Collector is authorized to reliquidate the duties accordingly to the extent of correcting this error.

### Reducing Iron Ore Freights.

Chairman Walker, for the Commissioners of the Western Traffic Association, handed down a decision on Friday concerning iron ore from the peninsula of Michigan and Wisconsin to Chicago and Milwaukee. This subject was before the commissioners last June in an application for a reduction of rates filed by the Northwestern road. It gave as its reason for making the request a general depression in the iron ore trade and the competition with Southern furnaces. The board declined to authorize a general reduction because there was strong opposition to such a course by other lines; but it undertook to correct an alleged dissimilarity in rates between a member of the association and an outside line by allowing the Northwestern to reduce the rate five cents per ton to Escanaba.

The Milwaukee and Northern had recently asked for a reopening of the question, claiming that its all-rail line to Chicago is placed at a disadvantage compared with the rail-and-water lines. It applied for a general reduction of five cents per ton. A further hearing was given, but the commissioners decided that they would not be warranted in granting the reduction unless in answer to a request united in by all or nearly all the interested carriers. They intimate that if existing conditions are continued into the winter, and if the competitive output of iron in the Southern States is further relatively increased, some general adjustment involving further concessions may be required, but for the present they believe their former disposition of the case should be adhered to.

The commissioners authorized a reduction in pig iron rates from Fond du Lac to Chicago to \$1.15 per ton, and from Fond du Lac to Milwaukee to 75 cents per ton, beginning Aug. 15.

The Hennin Process Company have been organized for the purpose of issuing licenses to use the Hennin gas process, which was briefly described in the issue of *The Iron Age* of July 2. They will have their main office in the Rookery Building, Chicago. The president of the company is William A. Vincent; vice-president, C. H. Seybt; secretary and treasurer, Wm. Barret Ridgely; manager and chief engineer, A. Hennin. The directors are Charles Ridgely, C. H. Seybt, J. C. Simpson, George T. Cutts, Wm. Barret Ridgely, Wm. A. Vincent and A. Hennin. A number of applications for licenses have already been received by the company. A full description of this interesting process is in course of preparation for our columns, and will doubtless be highly appreciated by manufacturers who are now anxiously examining into the merits of the numerous fuel-gas processes offered for their adoption.

W. G. Beverly, for 20 years manager of the Black Diamond Fire Brick Company, Portsmouth, and L. C. Turley, who has been identified with the management of the Portsmouth Fire Brick Company since the construction of that plant, have associated themselves with Geo. Davis, incorporating under "The Kentucky Fire Brick Company," capital stock \$300,000, and are now constructing a large plant upon the property owned by them in Kentucky, containing some 10,000 acres of Kentucky flint clays.



## Slow Combustion Construction of Buildings.\*

BY HARVEY B. CHESS.

In the United States nature has been lavish in the matter of timber supply, and our injudicious, not to say thoughtless, use of it has been largely responsible for the enormous annual loss of \$125,000,000. In one year it reached \$142,000,000, and at the rate being maintained during the current year, with \$50,000,000 loss reported in the first five months, we bid fair to keep up the record. Coming home to our own community, Fire Marshall McFadden of Pittsburgh reports the gross loss of the year ending March 23, 1891, at \$1,283,000, of which \$994,691 were paid by insurance companies, or within a few thousand dollars of a round million. These rough

laboriously garnered, or as nearly as may be estimated close to the value of one year's production of pig metal. Innumerable laws, ordinances and regulations prevail in every considerable city, to which are added the specifications and requirements of that very vigilant army, the fire underwriters. All are wholesome and praiseworthy as laid down, but somehow are lamentably short in practice. In thrifty New England a scheme of mutual insurance has been developed, and so successfully maintained over a long period as to be a pronounced success in every way. It does not pay out of an accumulated fund to recoup losses of a brother who possibly built so as to have deliberately invited the calamity incurred, but its main business is to have the brother so build that so far as human foresight can provide he cannot easily burn down honestly. After these requirements are complied with, he is admitted into a partnership which makes up

casualty of frequent and destructive conflagrations. The walls are built upon a vertical foundation, or screen, of bamboo and netting, by successive additions of small clay masses, the construction frequently occupying two years. Doors and windows are made of the same materials as the walls and roof; and they have stepped edges like our own safes. At the approach of fire valuables are hastily gathered together into the Kura. The crevices of the doors and windows are quickly closed up with soft wet clay, so that the structures are built not to add in any degree to the conflagration, but to absolutely resist its attack.

We cannot build high and many-storied Kura, but we can modestly take the suggestion to meet fire with earthy matter, and with that alone. It is admitted that ordinary wood lathing is entirely deficient in supporting that excellent flame-resistant common mortar. It supports plaster poorly



Fig. 1.—Slow Combustion Construction of Buildings.

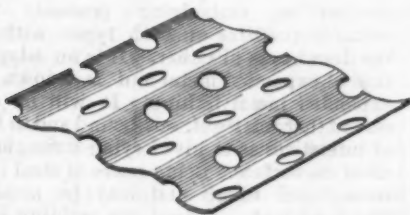


Fig. 2.



Fig. 3.

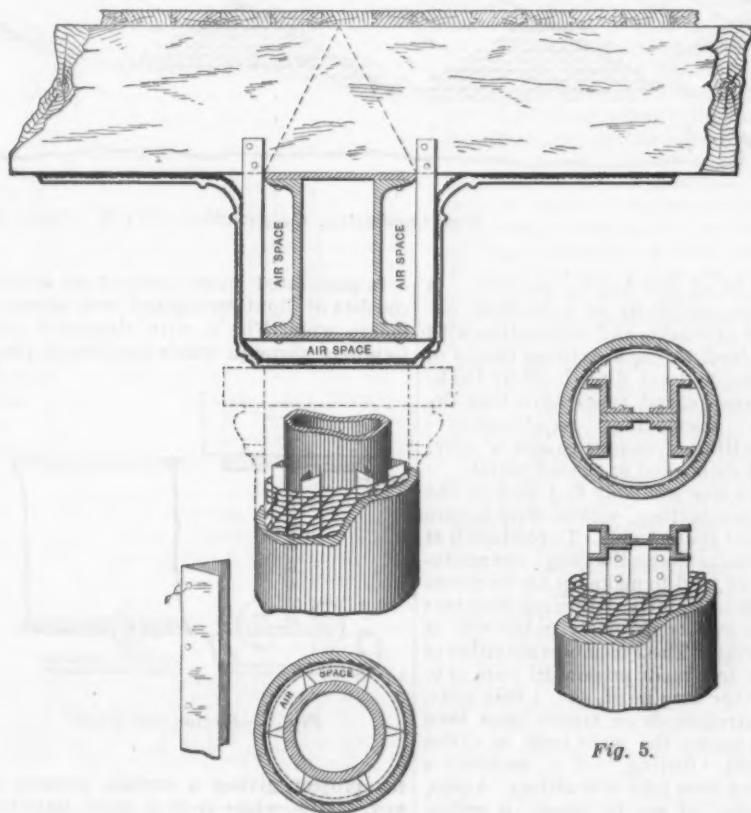


Fig. 4.

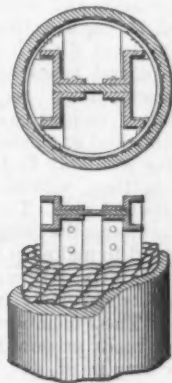


Fig. 5.

figures of the national and municipal loss do not cover the cost of the fire department and its equipment and maintenance, of private fire apparatus, water consumption, &c. In Pittsburgh, for instance, we find the outlay of our fire department for the year ending January 1, 1891, to have been \$245,495. This expenditure added to the gross loss given makes the municipality's annual contribution to this moloch just about \$1,500,000!

Thoughtful minds in America have developed systems of construction and invented safeguards and preventives. Improved structural material and their adjustment and arrangement, innumerable devices for extinguishing fires automatically, and otherwise improved fire extinguishment services, sprinkler service, &c., have been developed. While they have seemingly been brought to the highest pitch of perfection, the fact remains that losses by fire continue at an enormous rate. It is not generally appreciated that the loss of the nation by fire is about one-third of the whole return from our wheat crop, so

to him a loss if it comes. The class of buildings insured is mainly textile factories and storehouses. These have undergone such a transformation in their structure, that the term "slow combustion" construction has been applied to the system. This is most admirably described by that versatile gentleman, exponent and president of the Mutual New England Company, Edward Atkinson of Boston, in a popular article in the *Century* of February, 1889. The term itself seems clumsy, but for its honesty and expressiveness, it has come to stay. Mr. Atkinson, whose statistical statements none will gainsay, however much we Pennsylvanians differ with him in some features of national economics, asserts, and proves by the record, that by sedulous observance of their regulations and by their constant supervision, the fire losses have been reduced much below general high-grade risks of the country, even in that department of textile factories known as "picker."

In Japan there has been in use from time immemorial a domestic institution, singularly unique, in the shape of a fire-proof structure, used by all classes as a safe place for their valuables on the oc-

enough under ordinary circumstances, but it utterly fails in opposing fire attack, and affords a most admirable kindling of thoroughly dry light wood to the rapid widening of the flame. When it is considered that the plastering and chimneys are the only fire-resisting material entering into a very large share of America's structures to-day, it is not to be wondered at that such an amount of treasure is destroyed. Even in our brick houses outside of the walls the same condition exists. Floor, partitions, ceiling, &c., all add to the fire. The plaster is well enough, but the manner in which it is attached seems entirely wrong, because it does not hold, and because it contributes itself to the conflagration.

Metallic lathing in its various forms has now had such an extended use, and has proved itself of such economical and structural merit, that it may be safely used. When of good form it holds its coating unflinchingly, filling the dual function of protecting itself and the structure it sustains. Even when through faulty form and quality it fails in holding its coating, it is at least incombustible, and it does not add treacherously to the burning. A

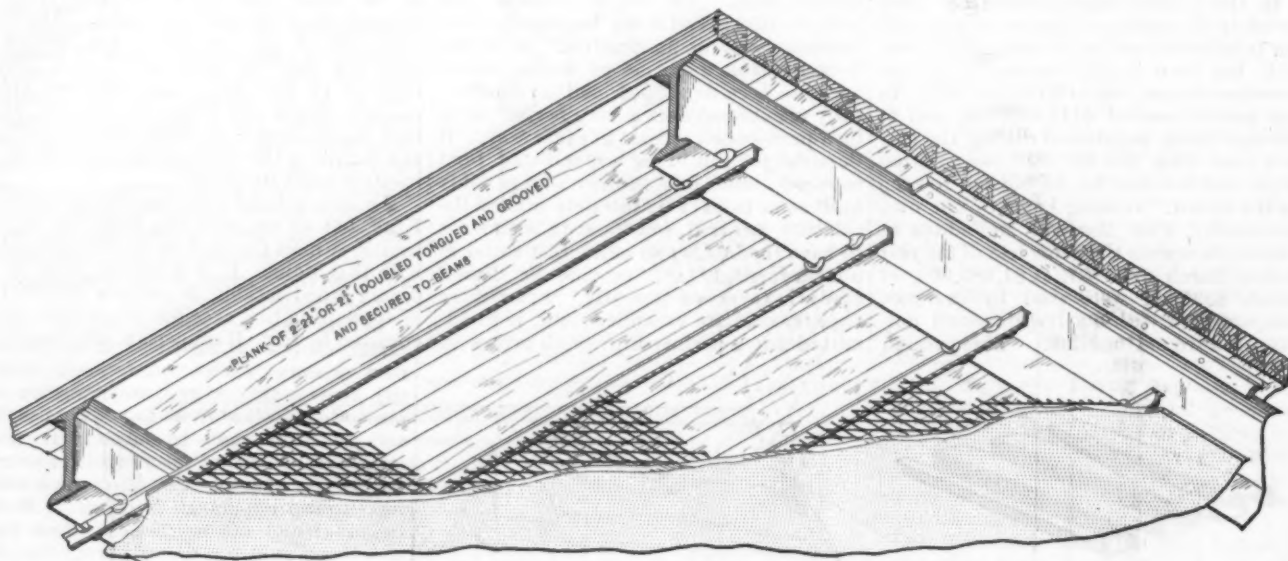
\*Paper read before the Engineers' Society of Western Pennsylvania, May 19, 1891.

good metallic lathing should be capable of easy application, should be properly rigid to yield good workmanlike result of coating and surface, and should readily permit molding into any form called for by the structural requirements, and finally it

Before referring to perforated metal lathing it may be proper to call attention to a dovetailed corrugated sheet, Fig. 1, the crumples or corrugations of which furnish dovetailed recesses for the reception of mortar.

to clutch the coating, while tongues of the latter may go through to assist (Fig. 3).

These examples are typical and cover the more important forms of perforated sheet systems. We then come to a cross between wire netting and the systems just



Slow Combustion Construction.—Fig. 6.—Composite Floor.

should yield all the keying possible. It should have practically an equivalent coefficient of expansion and contraction with its plastic load through extreme ranges of temperature, and not fling it off by buckling. Three general types have been designed to meet these requirements—namely, netting of various gauges of wire, perforated sheets and expanded metal.

The wire was probably first used in the form of plain netting, woven with square interstices of about  $\frac{1}{4}$  inch. To produce it at a reasonable cheapness the gauge was gradually reduced, and to make up for its consequent lack of rigidity, stiffening members are introduced transversely in the web at short intervals. These members are either of light sheet iron made prismoidal form or V-shape, or they may be of, say,  $\frac{1}{4}$ -inch rods. Again, corrugations or trusses have been struck up across the webs both to stiffen and to yield "furring,"—i. e., maintain a distance out from joist or studding. Again, plain netting, of say 18 gauge, is galvanized, thus soldering the wire at intersections, giving a most excellent lath-

In perforated sheets proper one system consists of light corrugated iron about 4 inches wide, Fig. 2, with staggered perforations, through which tongues of plas-

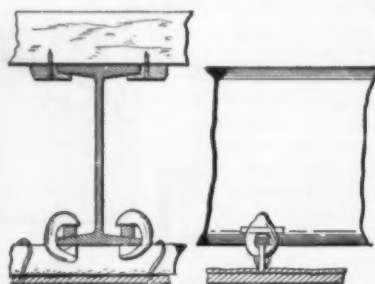


Fig. 7.—Sections of Floor.

ter project, giving a certain amount of key. This, while it is a great improvement on the rigid, unperforated dovetailed form last described, and is of a yielding na-

alluded to, embodying probably the valuable qualities of both types without the drawbacks of either. It is an adaptation of expanded metal and is known as expanded metal lathing. It will be observed that it is tight, self-bound and so full of interstices as to give keying throughout all of its surface. Being made of steel it is strong and tough and may be molded like sheet lead. Indeed, the molding into corrugated or curved forms only makes a more rigid structure. Its peculiar form creates a space back of it, thus providing for "furring" so as to clinch the mortar. It cannot be nailed so close as to prevent this. A simple experiment proves how unflinchingly it holds the fire armor for wood. The lathing has been simply nailed to the surface of a plain hemlock board and common mortar applied to the whole. Dropping it upon the floor, the mortar is not detached by the shock. The metal makes a dainty series of slight tied girders whose edges stand perpendicular to the face of the mortar and under great fire stress are so disposed as to prevent the mis-

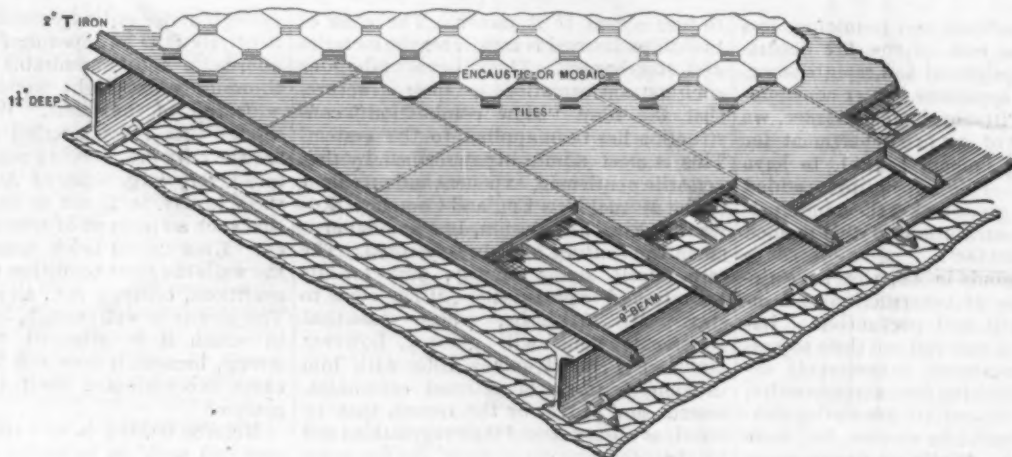


Fig. 8.—Incombustible Floor.

ing, but its greatly enhanced cost forbids its general adoption, and I may remark that it is not generally considered by experts that the zinc coating is any improvement other than the incidental soldering of the wires, gives a rigid structural quality.

ture transversely, is dangerously the reverse in a longitudinal direction.

Another form is that of sheets 15 inches wide, perforated at close intervals with a pyramidal punch, so that the ragged burr made forms at each hole four ragged claws

chievous stripping. In other words, the metal fabric remains neutral in its plastic bed.

An architect who had prepared this sample as a study of stippled surface for exterior use, tested its fire-proof quality by



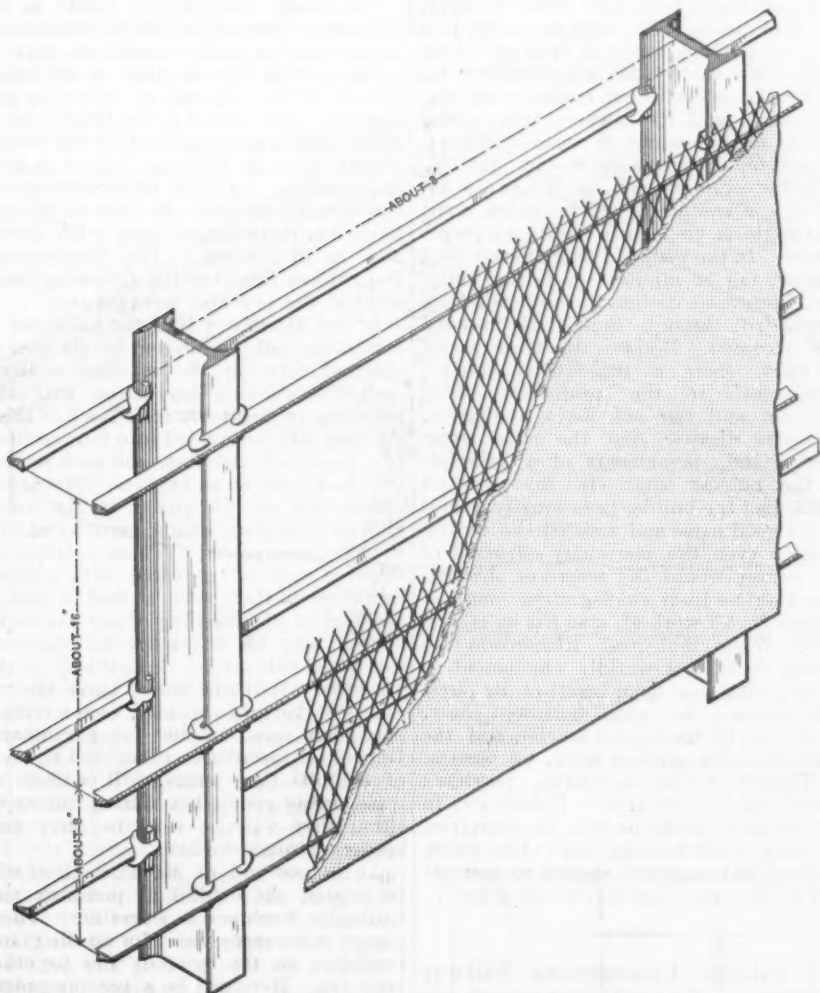
keeping it four or five hours over and in a glowing gas fire in his grate and cooling it under a stream of water, so as to simulate the conditions of actual fire. He repeated this double operation to his entire satisfaction, the sample coming out of

tom of the joists, without furring or distance. The joists were covered with old sheet iron simply laid on. A fire was started and vigorously maintained with old oil barrels for over an hour, when a prominent insurance party present called out "Enough."

laid across from wall to wall, a space of 6 feet, where it remained in the thick of the fire during the entire experiment. When it is remembered that nowhere was its surface more than 2 inches from the center of the section, it is a remarkable fact that quite a core of unburnt wood was left to sustain the beam as it did through the test. Through the intervention of the inclosing jacket of plaster, the charcoal of its exterior portion had not been allowed to be consumed to ash or to fall away. Similar successful tests, it is but just to say, have been made in quite a number of cities by makers of wire lathing, all pointing to the fact that there is a well defined systematic method of using a universal material of the greatest value in such a manner that we shall not readily burn down; in fact, may build any form of structure "slow combustion" and at reasonable outlay.

Let me say one word in regard to the recent Denver competitive tests which have deservedly attracted so much attention because they were manifestly fair so far as they dealt with an important detail, and would seem to be authoritative and conclusive, that far, but you will remember the fire walls of the firing tests were placed properly enough 2 inches in from the lower limb of the I-beams. They furnished not only the needed protection to the metal member so essentially an integral part of all such systems, but they also supported squarely the arches at their spring. Both clearly were conditions so remote from practice as to be remarked upon by the arbitrating experts. Manifestly and fairly the whole constituted a decidedly negative test, not at all complimentary to the system as a whole. I beg also to recall that the experts' report on the final condition of the material entering into the arches gave unbounded praise to the cement mortar used. In all the tests it was of all the materials the only one apparently unchanged. With the aid of illustrations let me present some applications of these fire-resisting metallic-bound coverings in ordinary constructions.

Fig. 4 shows a method of protecting a common iron box girder, wooden joists and cast-iron column. Light loops or straps are nailed to the joist. Expanded lathing, starting from the joist, bent into easy curves at the girder, is wired on to the strips, giving unbroken connection between ceiling and girder covering. It is



Slow Combustion Construction.—Fig. 9.—Partition.

the ordeal in an unchanged condition structurally, as is evident on examination. The naked lathing at the edge of the plate was heavily oxidized.

A small structure was built of fire brick with a clear height of 5 feet, and was roofed

Although the fire-resisting coating was only common plaster, it was unflinchingly held. It was found that while the superficial skin coat had flaked off here and

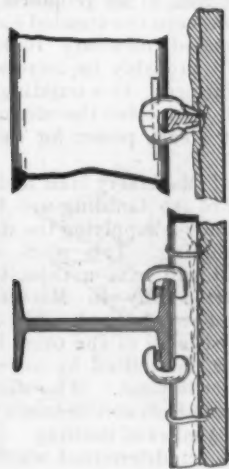


Fig. 10.—Section of Partition.

with common 2 x 12 inch hemlock joists. Just below the ceiling small openings were provided for the egress of flame at the sides and larger arched openings at both ends low down for air supply. The ceiling was made of common plaster applied to expanded metal lathing, simply nailed to the bot-

tom of the joists, without furring or distance. The joists were covered with old sheet iron simply laid on. A fire was started and vigorously maintained with old oil barrels for over an hour, when a prominent insurance party present called out "Enough."

there its body was intact. A piece of pine studding, 4 x 4 inches, wrapped with expanded metal lathing without air space and plastered in the usual manner, was

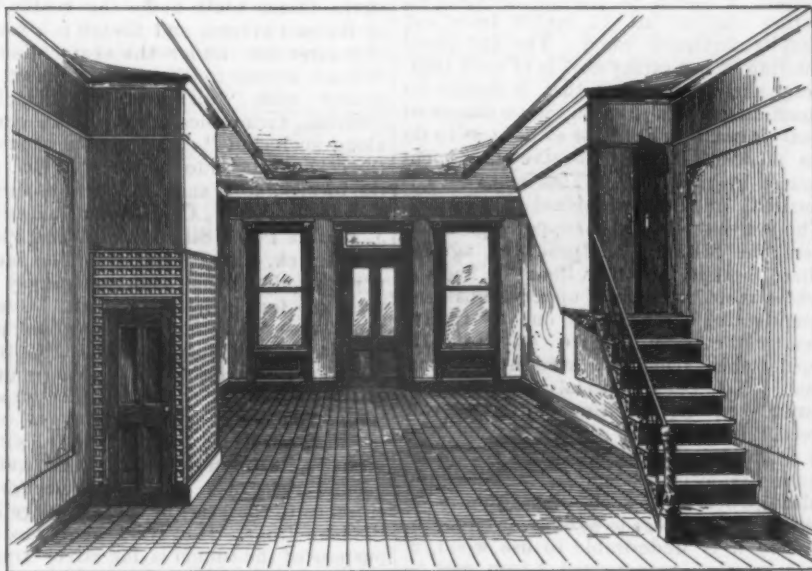


Fig. 11.—Elevator and Stairway Arrangement.

plastered and ornamented in the usual manner. The column has placed about it, at regular intervals, strips of light sheet iron bent into V-form, and slightly held

until an expanded metal jacket is securely wound around it. A plaster and cement coating is then applied, and swept on this foundation. The whole protecting coat is of a monolithic character. Of itself, structurally, this strong cylinder is of no mean added value. Large valuable air spaces are provided in both girder and column.

Fig. 5 indicates the manner of fire-proofing the Z bar wrought column. The furring in this case takes the form of light loops sprung into place, giving approximately a circular shape for the jacket of lathing as before, with the essential air spaces. Fig. 9 shows an incombustible partition capable of being a supporting one. Studding of I-beams are properly spaced, say approximately in 3-foot centerings, and light iron furrings  $\frac{1}{2}$  inch in depth are clamped by keys to the former in a horizontal direction and on a spacing of 16 inches. This detail may be varied to meet the exigencies of the situation. Thus at the top of the wainscoting it may be closer, as shown. No special care need be taken in spacing either the studding or the furring; no drilling or tapping is done; no bolts or screws are used. The section of studding may be varied. The oblong mesh in expanded metal permits easy wiring at any location, and plaster is applied in the usual manner. We thus have supporting vertical members of iron, tied and braced by the cross furring, reinforced by the steel lathing foundation and over all plates of good mortar, thus making a partition of undoubtedly great sustaining power in every way and not fragmentary in its make-up.

Again, let me present a floor, which, when covered with wood, is called composite. I-beams of proper section and depth, Fig. 6, span the building at centerings of 6 to 7 feet, and with no particular care as to spacing. On these the Atkinson or factory floor is laid. Instead of the one spline we propose double tonguing and grooving. Scantling, 3 x 4 inches, easily obtainable anywhere, will give us  $2\frac{1}{2}$  by about  $3\frac{1}{2}$  inch face flooring. This is laid and clamped as indicated, while underneath is clamped transversely, just as in the case of the partition, peculiar sectioned furring  $1\frac{1}{2}$  inches deep at say 16 inches centering. The lathing is wired to them and the whole is plastered. The sections, Fig. 7, show the relative arrangement of the parts. An analysis of the construction shows that we sustain a screen of proven fire-resisting nature say 10 to 11 inches from our heavily sectioned wood. The first metal binding of our earthy coat is of such character and so arranged that it fulfills its function perfectly, while the furring is of heavier make-up, but yet so light as to do no mischief in an expansive movement caused by great heat. This neutrality is secured by its provisional attachment. The heavier or main supporting members, the I-beams, are protected against sharp heat in the lower limbs or flanges, while their webs and upper limbs may confidently be counted on to receive nearly the same degree of heat, insuring their remaining straight and normal. No bolts, special drilling, tapping, &c., no precision of setting, are needed in this floor. As a construction it is resilient in a high degree, is not in any sense fragmentary, and as a horizontal plate girder is of such disposition in its parts and details as to be of great strength. Where it is undesirable to use wood, 2-inch or other proper-sized T-iron may be reversed and laid across to receive the usual tile, which, in turn, receive encaustic or other final covering, as in Fig. 8. The resilience and other qualities noted are retained in this variation. Between this construction and the usual filled iron joist systems great differences exist in the dead load of floor, of foundation and foot-

ing, weight of wall, facility and certainty, the time demanded for erection and the cost. Figs. 9 and 10 show the construction of a partition, and Fig. 11 a suggestion for an arrangement of an elevator and a stairway so that the opportunities for attracting a fire are improved.

Something is to be said about the range of application. We shall see metal joist and other like members in even our dwellings. We shall taboo inflammable wood as far as possible in our construction and relegate it and its softness and grained beauty to more nearly an ornamental function, using it for quality, not in quantity.

Architecture to-day, as it always has been, is a composite art, in which artist and engineer go hand in hand for a proper result. In the realm of more nearly pure engineering exemplified in bridge building, those who design them do not have them fail through limitations imposed and accepted. Besides the large factor of safety there is the ethical spirit—the *morale* in the profession—which will not and can not brook limitation, to invite disaster, and the great structures stand, monuments of a principle of the noblest kind. In the twin art cited, had the builder been equally jealous of his good name and resisted the unwise—often even the mercenary—demand of the patron, would the record of destruction and loss from conflagration stand as it does? All work of man has an ethical side. When the great Richardson lay dying, no further worldly emolument to be his, with poor hand bereft of its physical cunning, he, with borrowed ones, wove out his unclouded fancies, and the realization, his greatest work, we possess, a Temple of Justice, superb, peerless! "Faithful to the end." Cannot we, in our humbler work, be true to ourselves, too, and, while holding fast to that which is good, be courageous enough to cast off and break away from that which is bad?

**A Chicago Underground Railway Scheme.**—A very ambitious project has recently been brought to light in connection with passenger transportation in Chicago. Steps have been taken to incorporate the Wabash Avenue Subrailway Transportation Company of Chicago. The purpose of the proposed corporation is declared to be the construction of a line of railway from a point at the north line of the Chicago River at the south end of Cass street, thence south under the center line of Wabash avenue, and thence in a southerly direction under the center line of Wabash avenue to Eighty-first street, together with "all necessary branches, switches, turn tables, turnouts and curves along such line." The capital stock of the corporation is to be \$10,000,000, and the incorporators and first board of directors are George W. Cole, Maria E. Beasley, J. Warren Pease, Silas Rhoades and Pleasant Amick, all of Chicago. The incorporators allege that they are merely figureheads for Eastern capitalists. One of them says: "The Southern terminal purports to be at Eighty-first street, but from remarks I have heard during the progress of the business I believe that the company intend to connect with the railways coming in at the south end of the city, with a view to ultimately turning the underground road over to the railroads for an entrance to the heart of the city to relieve the lake front. However, the immediate purpose of the tunnel is for street traffic. The power used will be a cable or electricity."

The Brazilian Government, by a decree which goes into effect on January 1, 1892, includes Consular invoices among the documents required to effect a clearance at Brazilian custom houses. The step has

been taken in accordance with the resolution adopted by the International American Conference.

### The World's Fair Power Plant.

The steam and electric plants at the Columbian Exposition will be stupendous. Some idea of their magnitude may be gathered from the fact that 24,000 horse-power will be required to drive the machinery. The power at the Centennial in Philadelphia was furnished by the Corliss engine, now at Pullman, which is 2456 horse-power. At Paris 6000 horse-power was found sufficient. In view of the difference in these figures some other details may be of interest. The Construction Department furnishes the following statement of the probable arrangement:

In the Machinery Hall the machines on exhibition will be driven by six lines of shafting carrying the required pulleys, each line running lengthwise with the building, or about 800 feet. Each of these six lines will be divided into four sections of a length of 200 feet, and each section will be driven by an engine. This necessitates the use for power in Machinery Hall of 24 engines with a capacity of 125 to 200 horse-power. These sections of shafting will be provided with friction couplings on their ends, so that in case of accident or the disabling of any engine its section may be driven by the engine on the other side of it. Lengthwise in the Machinery Hall will travel three electric cranes of 20 tons capacity, each having a maximum speed of 400 feet per minute. During the installation of and the removal of exhibits these cranes will be used for transporting goods, but during the exposition they will be used to carry passengers through the halls.

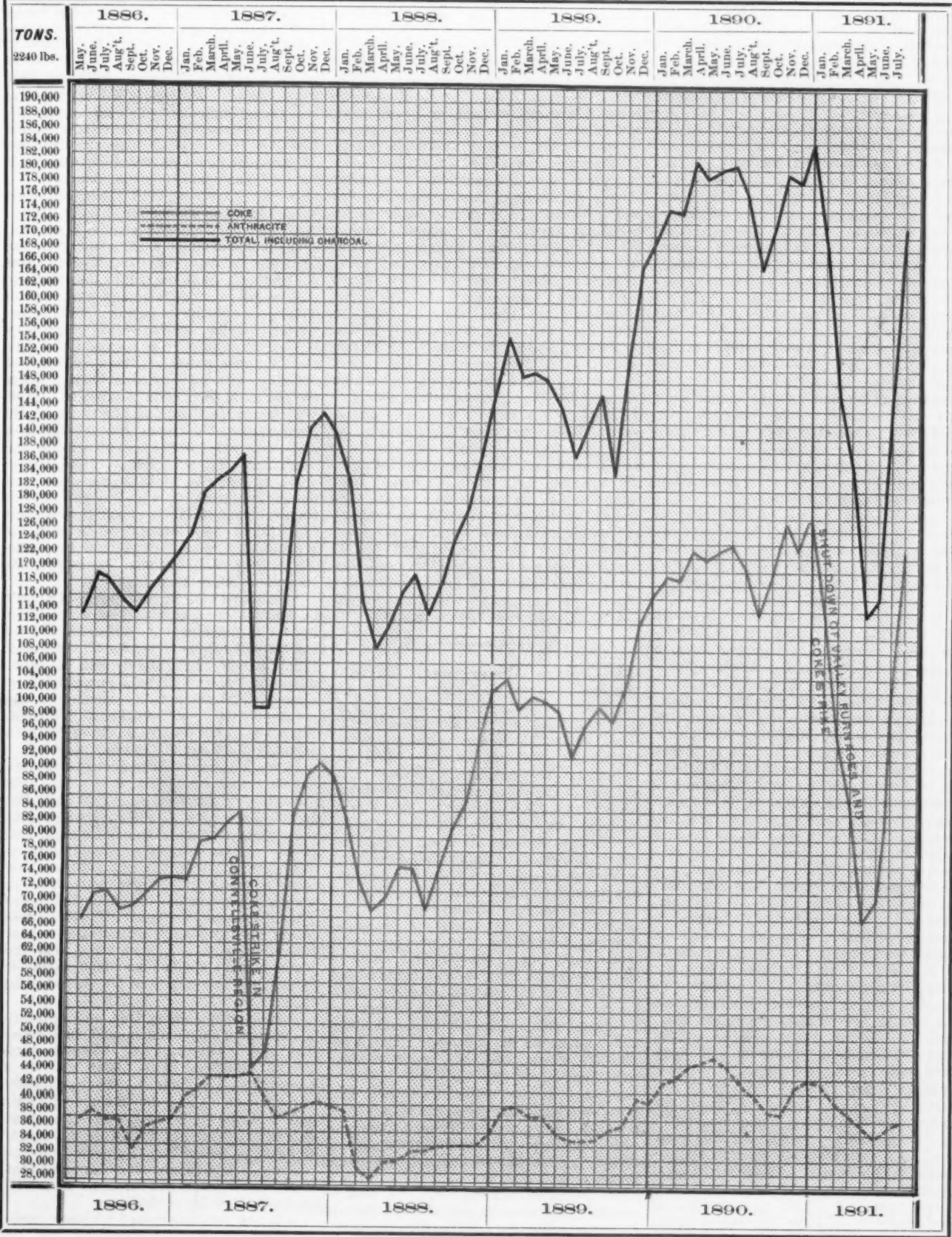
At the east end of Machinery Hall will be located the exhibit of pumping and hydraulic machines in operation. These pumps will supply water for all the grand fountains on the grounds and for other purposes. Here will be a pumping plant almost equal in capacity to any of the plants of the water works of Chicago. There will be pumps working with a capacity of 40,000,000 gallons per day.

In the Machinery Annex will be located the electric energy plant, where a number of engines of various types will furnish the 16,000 horse-power necessary to operate the generators for electricity for light and power. These engines will be located so as to form a compact central station. This plant is elastic in its proposed capacity, and its power can be extended indefinitely. The estimated necessary 16,000 horse-power will probably be increased rather than diminished. In a building near the annex will be located the steam plant for furnishing steam power for this electric station.

South of Machinery Hall and opposite the center of the building will be located the boiler house supplying the steam used in the building. This plant will be a model, and will have a capacity of 8000 horse-power. Only in Machinery Hall will steam power be used. Electric power will be used in all of the other buildings, and will be transmitted by wires from the central electric plant. It is estimated that in Machinery Hall and its annex there will be above  $3\frac{1}{2}$  miles of shafting.

It is not yet determined whether crude petroleum or coal will be used for fuel. To run this big plant during the exposition will require at least 75,000 tons of coal or 225,000 barrels of crude petroleum. It will require at least 250 engineers, firemen and attendants to man this plant. To keep it bright and clean during the exposition will require 90,000 pounds of waste, and it is estimated that \$9000 worth of lubricating oil will be poured on its innumerable bearings.





FLUCTUATIONS IN ACTIVE BLAST FURNACE CAPACITY.





### What Can Be Done With a Universal Grinding Machine.

We may presume that the universal and plain grinding machines made by the Brown & Sharpe Mfg. Company of Providence, R. I., are well known. We may also safely suppose that the range or capabilities of these machines are best known by their makers. It is for this reason, therefore, that we take the following matter from a treatise on the construction and use of grinding machines, just issued by the above company. Omitting all matter relating to the construction of the machine itself, we shall confine our selections solely to the work that can be done, dwelling in this issue upon the requisites of the emery wheel. As most essential to the production of good work we begin with

#### The Emery Wheel.

Too much must not be expected of one wheel. A variety of shapes, sizes and grades of wheels are necessary to bring

less liable to glaze than a fine wheel. As a rule, the harder the stock the coarser the wheel required to produce a given finish. For example, coarser wheels are required to produce a given surface upon hardened steel than upon soft steel, while finer wheels are required to produce this surface upon brass or copper than upon either hardened or soft steel.

Wheels are graded from soft to hard, and the grade is denoted by the letters of the alphabet, A denoting the softest grade. A wheel is soft or hard chiefly on account of the amount and character of the material combined in its manufacture with emery or corundum. But other characteristics being equal, a wheel that is composed of fine emery is more compact and harder than one made of coarser emery. For instance, a wheel of No. 100 emery, grade B, will be harder than one of No. 60 emery, same grade.

The softness of a wheel is generally its most important characteristic. A soft wheel is less apt to cause a change of temperature in the work or to become glazed

ble. The faster it is run up to this point the more stock will be removed and the more economically the work will be produced. Occasionally, however, it is necessary to run a wheel rather slowly, as the more slowly it runs the coarser it cuts and the less likely it is to change the temperature of the work. As a general rule, on any given stock, the softer the wheel the faster it should be run. Should a wheel heat or glaze it can often be made somewhat more effective by being run more slowly. On the other hand, if it be too soft, it can often be made to somewhat better hold its size and grind straight, by being run more rapidly.

The surface speed of the work should be proportionate to the speed of the wheel—that is, other things being equal, if the speed of the wheel is reduced the speed of the work should be reduced also. The desire is to have the work revolve at such a speed as to allow time for the wheel to cut away the high points on the work. If the work is run so fast that there is no time given for the wheel to cut, but the

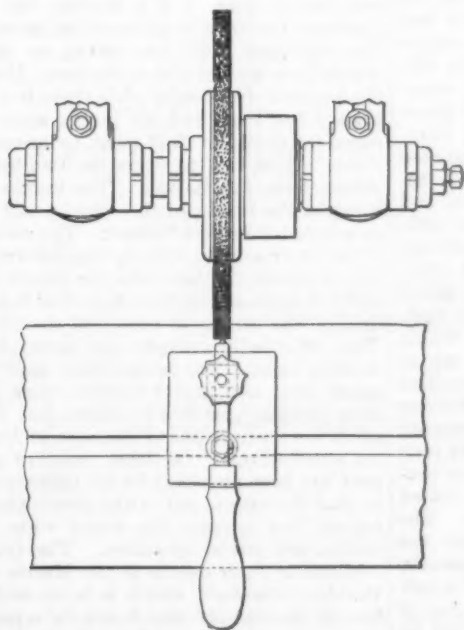


Fig. 1.

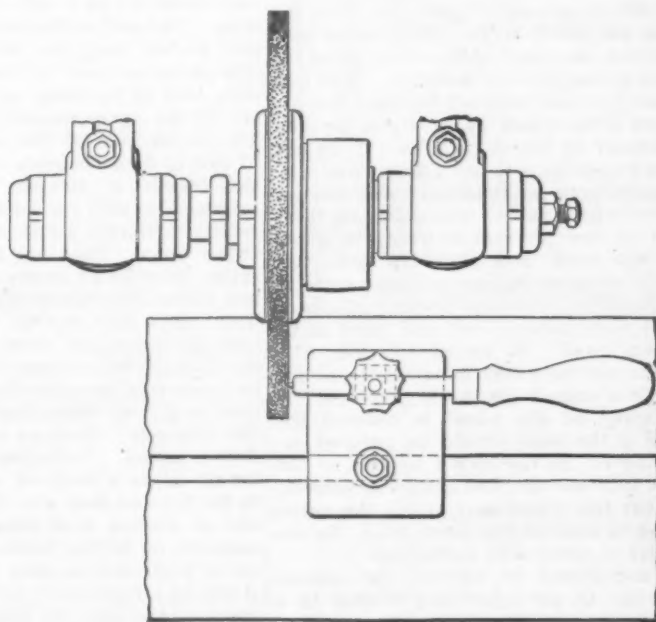


Fig. 2.

### KEEPING EMERY WHEELS TRUE.

out all the possibilities of the grinding machine, the same as a variety of shapes and sizes of tools are necessary to obtain the best results from the lathe or milling machine.

The aim in grinding is usually to obtain an accurate or true surface, but as a true surface is almost always a good surface it should be remembered that generally the same methods are employed, whether an exact size or a fine finish is the object desired.

In selecting and using a wheel, we are governed by the character of the metal to be operated upon, the shape and size of the work and the degree of accuracy desired. We have to consider the size of the particles of emery in the wheel, the hardness of the wheel and its width. We also have to determine the speed at which it is to be revolved, the speed at which the work is to travel or be revolved, and whether or not water is to be used.

Wheels are numbered from coarse to fine—that is, a wheel made of No. 60 emery is coarser than one made of No. 100. Within certain limits, and other things being equal, a coarse wheel is less liable to change the temperature of the work and

than a harder one. It is best for grinding hardened steel, cast iron, brass, copper and rubber, while a harder or more compact wheel is better for grinding soft steel and wrought iron. As a rule, other things being equal, the harder the stock the softer the wheel required to produce a given finish. The width should be in proportion to the amount of material to be removed with each revolution, and as a wheel cuts in proportion to the number of particles in contact with the work, less stock will ordinarily be removed by a narrow wheel than by one that is of full width. The feed will also have to be finer if a narrow wheel is used. The quality of the work, as a rule, is improved by using a wheel of full width if the wheel is soft in proportion. Judgment should be exercised in deciding upon the width of wheel to be used, as sometimes the work is of such size and shape as to make it necessary to use a wheel with a narrow face. Where this is the case the wheel should, where strength will admit, be only that width throughout, and care should be taken that the grade is kept in the proper relation to the width.

A wheel is most efficient in grinding just at the point before it ceases to crum-

ple. The tendency is for the wheel to follow the inequalities in the form of the work and straight or round surfaces are not obtained. When the wheel is not free cutting and the pressure of the wheel against the work is sufficient to cause the work itself to spring or to cause a slight movement of the oil upon the centers the accuracy of the result is impaired. The coarser or softer and more free cutting the wheel the greater can be the speed of the wheel, and consequently of the work. It is, however, not necessary to graduate the speed of the work as closely as the speed of the wheel.

The desire in accurate grinding is to have a free cutting wheel and to obtain the proper speeds so that the stock may be removed with the least possible amount of pressure, thus preventing a change of temperature in the work and allowing the high parts to be most speedily reduced.

Thus far we have had in mind the selection and use of wheels for the comparatively small or medium sized work ordinarily ground on our machines. The requirements in grinding extremely large or long pieces are somewhat different.

For example, in grinding a piece of steel 3 inches long, 1 inch diameter, the most absolutely accurate work would be accomplished by selecting a wheel only just hard enough to retain its size while passing six or eight times over the surface of the piece, and we have suggested that such a wheel should be run at a high rate of speed. We have considered rapidity of production as more important than economy of emery. If, however, we should attempt to use such a wheel to grind a piece of steel 1 inch diameter and 3 feet long, it is clear that before the wheel had passed over 2 of the 3 feet it would have ceased to cut.

The problem now is to maintain the diameter of the wheel, so as to take a uniform cut over a large area. Each particle of emery must be used as long as possible before being thrown away. A wheel full width and full diameter should be used, and the face should be true, so that as many particles as possible may be brought in contact with the work, and each particle be dulled as little as possible while the wheel is passing over the work. The particles may be used a longer time, and are not so rapidly thrown away in a hard as in a soft wheel. Accordingly, one expedient in grinding large areas is to increase the grade of the wheel as the area increases, the speed of the wheel being reduced as the grade is increased. The loss of fine particles will not decrease the diameter of the wheel as rapidly as the loss of coarser or larger particles. Thus another expedient is to use a finer wheel. A fine wheel can be relatively softer than a coarser wheel, and so with a fine one there need be less pressure between the wheel and the work, and there is more certainty of obtaining an accurate surface.

If a wheel is run rapidly the particles of emery soon become dull and have to be thrown away. To retard this loss, it is well to run the wheel more slowly as the length or area of the work increases. If the speed of the wheel is reduced the speed of the work should be reduced accordingly. As the length or area of the work increases the feed should be coarser, so that the wheel may travel the entire length or area of the piece while its diameter is practically unchanged.

Water should be used on such classes of work as are injuriously affected by a change in temperature caused by grinding. It should be used upon work revolving upon centers, as in this work a slight change of temperature will cause the wheel to cut on one side of the piece, after it has been ground apparently round. In very accurate grinding water is especially useful, for it should be remembered that the exactness of the work will be affected by a change in temperature which is not perceptible to the touch. In very accurate grinding it is also well to use the water over and over again, as by so doing there is less difference between the temperature of the water and that of the work than if fresh water was used. For many purposes soda water is the most satisfactory, as it has less tendency to rust the work or the machine.

For internal grinding it is especially important that a wheel should be free cutting and the work revolved so slowly as to enable the wheel to readily do its work. The wheels should generally be softer than for external grinding, as a much larger portion of the periphery is in contact with the work. Their small diameters make it impossible for the proper periphery speed to be obtained, and this must be considered in regulating the speed of the work.

#### Keeping Wheels True.

Wheels should always be kept true. They can be easily kept so by truing them off with a diamond tool, known as the black diamond or carbon point, held by hand or in the fixture sent with several of

the machines. A new wheel should be started slowly and trued gradually. Fig. 1 shows the method of truing the face, Fig. 2 the side of a wheel.

(To be continued.)

### The Harvey Steel Car.

Unusual interest has been manifested in railroad circles in the new system of building freight cars introduced by the Harvey Steel Car Company of Harvey, Ill. The mechanical engineer of this company, George L. Harvey, conceived the idea of constructing cars with a steel frame work and the usual wooden flooring and lining. In working out his plans he developed the very important feature of using only standard rolled shapes throughout the car. He does not use a special rolled shape of any kind in his method of construction. This is regarded as a most important matter, because the widespread use of cars of this character opens a new and extensive field for the present standard products of rolling mills.

The outside and intermediate sills are each made of two 6-inch channels 34 feet long. The end sills are of the same material, 10 feet long, two pieces to the sill. The plates are made of two 5-inch channels, each 34 feet long, and the end plates are of the same material 10 feet long. The center sills of the car are composed of two 12-inch channels running the entire length of the car. The sides and intermediate sills are separated just sufficiently to allow a  $\frac{1}{4}$ -inch bolt to pass between them. They are held from separating laterally by means of clamps above and below, through which the bolts pass. The clamps have tips on the ends which turn down over the channels. On top of the channels which form the intermediate and side sills are placed wooden battens held by  $\frac{1}{4}$  bolts which pass down between the channels. To these battens a  $2\frac{1}{2}$  inch floor is nailed. To further stiffen the center sill laterally strips of wood are nailed to the floor on each side of the sill. The use of clamps and bolts prevents the necessity of drilling holes in the channels, and if a channel becomes bent in a wreck it can be straightened without danger of cracking through the holes, as would be the case if the channels were riveted or held by through bolts. This method of retaining the full strength of principal members is carried throughout the construction of the car. The draw bar attachment is riveted to the ends of the center sills. The center of draft is on a line with the lower flange of the 12-inch channel; thus these channels form not only a strong compression member but a continuous draft rigging as well. The body bolsters are formed of two 6 inch channels, with two tension members 2 x 1 inch with tee ends extending over the top of the center sills. This forms a strong and light body bolster which, for its weight, will carry a much greater load than any bolster of the ordinary form. To give this body bolster greater carrying capacity two 4 inch I-beams are inserted between the 6-inch channels and the sills. These extend from side bearing to side bearing across the car. Thus the body bolster is about 16 inches deep at the center. The needle beams are made of 5-inch I-beams extending across the car, as shown. In addition to these latter braces there are also intermediate braces formed of 4-inch channels bolted to the sills. The posts are formed of pressed steel of U section and secured by strap bolts at top and bottom, which pass through the sills, the top sill or plate being made in a manner similar to the side sills, but 5 inches deep instead of 6 inches. The inclined braces are made of angles 3x2x $\frac{1}{4}$  and the tension

rods of  $\frac{1}{2}$ -inch round steel. A minor ingenious feature in the car body is the arrangement by which the wooden lining is nailed to the steel posts and carlines, the latter being formed of No. 9 steel plate bent to a U shape so as to receive strips of wood into which the nails are driven to fasten the roof in place. Taking it altogether there are about  $3\frac{1}{2}$  tons of rolled steel in the car body.

The truck adopted by the company is composed entirely of metal. The bolster is made of two 10-inch I-beams, firmly held together by plates at each end and in the center. The spring plank is a channel iron, placed horizontally with the flanges turned upward. The bolster is guided by columns in the diamond frame of the truck, through each of which a  $1\frac{1}{2}$  inch bolt passes. On the I-beams of the bolster there is secured a casting which fits over these columns so as to guide the bolster. The foot of each column is spread out considerably, so as to get a long bearing upon the channel iron spring plank, and thus keep the truck square. The bars are not particularly heavy, the upper one being 4 x  $1\frac{1}{2}$  inches, the inverted arch bar 4 x  $\frac{1}{2}$  inches, and the tie bars, 4 x  $\frac{1}{2}$  inches, but the depth of the truss is greater than usual, so that the frame is fully as strong as those which have heavier iron in the bars. Under the pressed steel center plate there is a flat plate 3 feet long and 12 inches wide secured to the top of the I-beam by means of rivets. This ties together the two beams which form the bolster. The brakes are hung on the inside of the wheels, and are suspended from the bolster. The casting which is attached to the spring bolster for this purpose fits between the upper and lower flanges of the I-beam, so that a great deal of the strain is taken off the rivets. This effectually prevents the latter from rattling loose. The brake beam used is a metal one, and safety hangers have also been provided, so that it cannot fall back upon the track if one of the regular hangers should break. A third point of support has been provided for the brake beam, so that the upper end of the brake shown cannot run against the wheel when the brakes are not in operation. The trucks conform in their details to the Master Car Builders' standard, and it is to be said of the car throughout that it can be repaired or rebuilt at any shop from stock that is readily available without necessitating delay in waiting for castings on special shapes. The truck is naturally somewhat heavier than those with wooden bolsters, but, on the other hand, the body is lighter by 10 per cent. or more.

The works at which these cars are built were described in *The Iron Age* of July 16. The office of the company is in rooms 819 to 825, the Rookery, Chicago. The directors are as follows: T. W. Harvey, president; W. J. Watson, vice-president; E. T. Jeffery, Henry B. Stone, F. H. Revell, Morris Sellers, N. K. Fairbank, A. G. Spalding and John P. Wilson.

The reported consolidation of the Chicago and Minnesota Ore Company with the Minnesota Iron Company, who own the Tower Mines and Duluth Iron Range Railway, turns out to be a much larger deal than at first reported. The Chicago and Minnesota Ore Company and the Chandler, Chippewa, Norma, Delaware and Canton Iron companies, as well as the Duluth and Iron Range Railway and the Minnesota Steamship Company, are all owned in great part by the stockholders of the Minnesota Iron Company. It is proposed to consolidate all these into one company, who will own every mine at present shipping ore, the Duluth and Iron Range road and a total land holding of about 40,000 acres. The combined capital will be about \$17,000,000.



### The Howell Sheet Mill.

In the issue of *The Iron Age* of May 28 we printed an illustrated description of the compound two high mill for rolling sheets of various widths and lengths for tin plate, designed by W. G. Howell, superintendent of the Keystone Horseshoe Company of Philadelphia. With the object of eliminating the item of cost by skilled labor, Mr. Howell proposes a continuous train with its blooming mill,

lengths and coiled, instead of boxing them. While the cost for skilled labor alone on a tin sheet mill by present methods is \$12 for No. 30 W. G., Mr. Howell estimates the cost by this method at not more than \$2.

### Latin-American Trade.

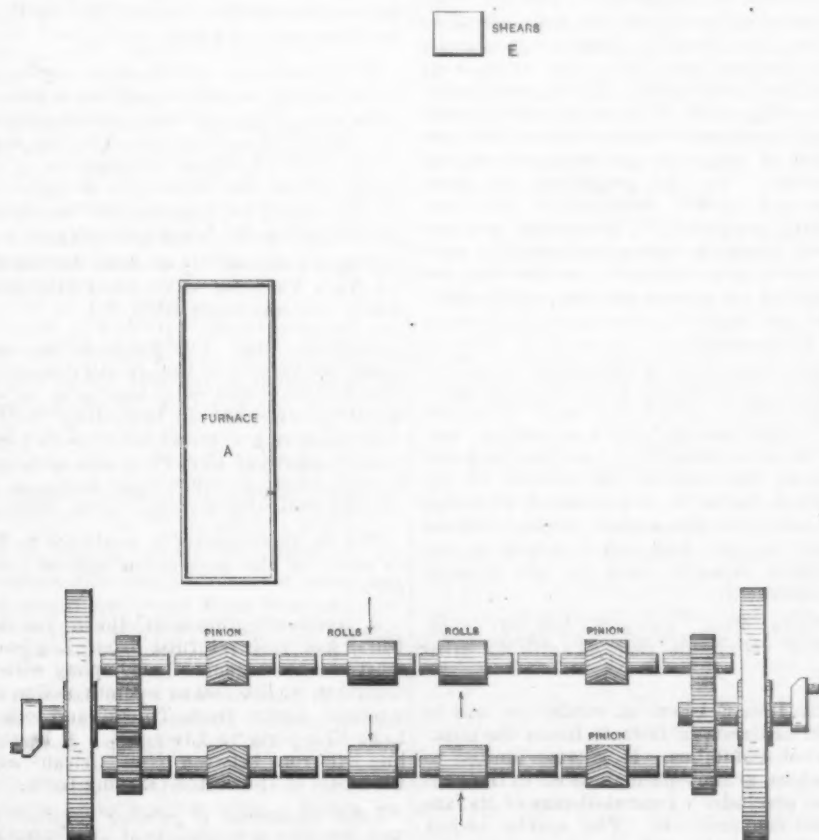
Adolph Schreiber and G. C. Power, who, some months ago, were sent as commissioners by the Illinois Central

therefore, be put up with reference to protection against damage by water, to adaptability to transportation by mules or light wagons and to the lightest packing consistent with absolute safety of contents.

The general practice in Spanish America is to sell domestic products for cash and to buy foreign goods on a credit of six months; which credit, it is understood, may be extended to nine, or even 12 months, interest at 8 per cent. per annum being paid on the extension.

The whole trade of Europe is conducted on this basis, and it may be remarked, in praise of Spanish-American commercial integrity, that losses from credits are of extremely rare occurrence.

In Cuba and Mexico business is gradually tending to a cash basis; in the former country considerable capital is accumulated at Havana, and the disposition of



The Howell Sheet Mill.—Fig. 1.—Blooming Mill.

which would be in charge of one skilled man, the other help needed being common labor. In the blooming mill, Fig. 1, the slab or ingot is taken from the furnace A and is passed through the first set of rolls, as indicated by the arrow, and is put back through a second set, receiving two reductions for each movement until reduced to  $\frac{1}{2}$  inch thickness. It then goes to the shears E, is cut and packed, and at the same heat is taken to the continuous train, Fig. 2, on a buggie. The passage through the continuous train is indicated by arrows. The train is built in detachment, so as to have control of the speed of the several groups, the strip to leave one set of rolls at about the time it enters the next, in order to avoid the complications often incident to continuous mills.

The entire system of rolls is in one plane and there is no lifting of the piece, and only the lateral movement of it from the first to the second set of rolls of the blooming train.

The blooming and the continuous trains are placed in close proximity. The six engines required for this method would not be costly, since the train may be made to run at one-half or one-third of the speed of the engine. The trouble in gearing a continuous train from one engine has been that the speed of each pair of rolls cannot be changed at will to accommodate the stretch of the piece. By having the rolls detached in groups the engines may be speeded to suit the elongation of the strip. With this train strips of suitable width for making cans may be rolled in long

Railroad to Mexico, Central and South America, for the purpose of investigating the trade conditions of those countries and the prospect of securing direct trade with the West via New Orleans, have submitted a comprehensive report, comprising statistics of the various countries visited and making several practical suggestions. They represent that New Orleans fails to receive her share of the trade because no suitable effort has been made to obtain it. They advise the running of two steamships direct from New Orleans to Havana and Vera Cruz, one to Colon via Greytown and one to Laguayra. To secure the benefit of direct intercourse the report repeats in substance the recommendation of our consuls respecting the choice of goods, the manner of shipping them and the terms on which they should be sold, concluding as follows:

1. Spanish-American markets require special sizes, patterns and styles of goods; the exact article demanded must be furnished, as no substitute, however closely alike or superior to the one ordered, will be accepted by the consumer.

2. Packing of goods requires the most careful attention. It should be borne in mind that at most Spanish-American ports steamers transfer and receive their cargoes in lighters, while at anchor in heavy surf; that the ports are mere points of transit for merchandise destined for interior points; that customs duties are, in most instances, levied on gross weight of packages, no deduction being allowed for breakage or other damage. Goods should,

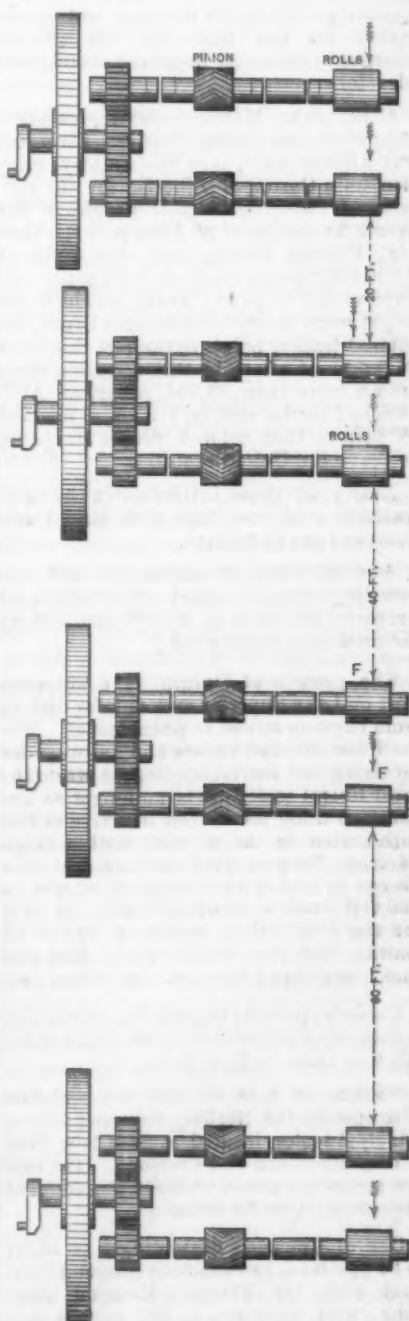


Fig. 2.—Continuous Train.

merchants being to keep within their means, long credits are seldom if ever asked for. In the latter, with the construction of railroads and the establishment at all important interior localities of branches by the banks of the capital, a new direction is given to the movement of commerce, and old methods are being, if not abandoned, at least greatly modified.

## THE WEEK.

The importance of the Erie Canal to the commerce of New York is shown by the grain blockade on the New York Central and Erie railroads. Since the recent break outward steamers have been compelled to sail only partly loaded, although the grain elevators of those roads were worked night and day. But the roads are not breaking rates much, as they expect to get all they want at full rates after the canal fleet is freed from obstruction. The president of the Canal Protective Union, Capt. M. De Puy, meanwhile complains bitterly of an alleged overcharge of 1½ cents per bushel for transferring canal grain, also of wharfage charges equal to \$3,000,000 per annum at New York and Brooklyn, while wharves at other cities are free. Before the railroad companies got control of the grain elevators in New York and Buffalo grain was transferred by hand and horse-power for less than half the present charges by the latest improved steam grain elevators.

Capt. John Murray, who represents a steamship line plying between Liverpool and African ports, is in this country, with Benjamin Gaston of Liberia, for the purpose of inducing colored people in the South to emigrate to Liberia. Mr. Gaston, Captain Murray says, has a list of 2,000,000 signatures of colored people who have agreed to go to Liberia, and he hopes to get many more. Ex-Senator Bruce, the colored leader, points to the fact that after 70 years of effort in this direction there are no more than 20,000 American Africans in Liberia, and says it is a mistake to believe that colored people are going to leave the United States.

Nearly all those interested in the reorganization of the Cape Cod Ship Canal Company are Canadians.

A tidal wave at Melbourne and the resulting floods caused destruction of property estimated at \$2,500,000. Many factories were submerged.

The growth of Duluth as a shipping port on Lake Superior and not far distant from the iron mines is phenomenal. The facilities afforded vessels and railways for receiving and delivering cargoes are on the most liberal scale. It is no longer an uncommon thing for a vessel to arrive at Duluth harbor in the morning with a cargo of from 2000 to 2500 tons of coal, discharge it, load with a cargo of 90,000 to 100,000 bushels of wheat and start back for the East within the same day of 24 hours. Last year, besides grain, flour and coal, she shipped 870,848 tons of iron ore.

Cuban exports of sugar last year made an aggregate of 493,967 tons, of which 465,131 tons came to New York.

Millions of tons of coal are weighed with ease by the Reading company at four principal scales, located at St. Clair, Pine Grove, Shamokin and Cressona. The cars run across the scales without stopping at the rate of 10 miles an hour.

One of Chicago's drawbridges is about to be operated by electricity under a contract with the Thomson-Houston Company, who have put in the motors and machinery, and will operate the bridge at their own expense for 60 days, when, if the test has proved satisfactory, the city is to buy the plant.

The long-standing complaint against railroad monopolies, often fostered in the interest of so-called labor reformers, has resulted in so much hostile legislation by the different States that many railroad companies already speak of impending bankruptcy as the consequence. Other railroads are in a position so uncertain that

the property has greatly depreciated. It is alleged that the tendency is toward ultimate confiscation. Now comes the State of Texas with a railway commission clothed by law with extraordinary powers, and ex-Senator Reagan, who was the author of the Interstate Commerce act, and has become chairman of the State Railway Commission, announces a reduction of rates for all railroads in the State of Texas. The proposal is, according to competent authority, a reduction from a third to one-half on all the important products. The details of the new classification, however, have not been completed. The New York *Bulletin* says: "Men who know anything about the railway business are quite aware that comparatively few of the railroads are able to earn dividends. The large majority, especially at the West and Southwest, earn nothing beyond interest on their debts, and some of them are not even able to pay interest. To the prejudices of these ignorant voters demagogues are constantly pandering, by proposing new and more stringent measures restricting rates charged, and indirectly confiscating the property of owners for the public use." The cry against "monopoly" is liable to go to an extreme.

Manufacturers in Germany expect to make a good display at the Chicago fair.

"Light money" dues cannot be collected from unregistered vessels purchased abroad and owned by citizens of the United States, is the decision of Judge Benedict of the United States District Court in this city and is adverse to the position recently held by the Federal Government.

Lynn, Mass., gains \$4,000,000 in assessed value this year, despite the great fire.

An Italian-American exhibition will be held in Genoa in 1892, to honor the memory of Columbus. It will be limited to samples, as the space devoted to the purpose precludes a general display of Italian-American products. The special object of the exposition is to give the utmost possible development to the traffic between Italy and the two Americas, and thus increase the friendly and business relations between the two populations.

There are 100,000 American tourists in Europe and they are said to be spending money more freely than ever before. On account of the prevailing dullness some of the hotels at the most popular resorts in Germany would be closed but for their presence.

An interesting feature of the new French Atlantic liner, "La Touraine," is the small amount of power expended in driving the large hull at fast speed, the record at all the other ocean flyers having been beaten by this latest arrival. Her displacement is 11,675 tons, and to drive her 20½ knots she has twin screw engines of 13,000 indicated horse-power, which is equal to 1.11 I. H. P. per ton of displacement. For the same speed the City of Paris had 1.38 I. H. P., the Eutruia has 1.36 i. h. p. for 19 knots and the Teutonic has 1.42 I. H. P. On her maiden trip from Havre to New York La Touraine beat the record from any French port, the time being 7 days, 3 hours and 11 minutes.

The cultivation of tea is now assuming large proportions outside of China and Japan. In British India and Ceylon teas are now produced of a quality that renders them popular in the market. The Spanish are endeavoring to raise tea in the Philippines. The Dutch are growing it in Sumatra, Borneo and Java, although success has yet been attained only in mountainous districts. The French are experimenting in Cochín China. The quality of most of these teas is far below that of the

Chinese, but owing to the use of labor-saving machinery in curing they can be marketed more cheaply.

Mexico is added to the list of famine-threatened countries.

Phosphate companies have been formed to work lands in Ocala, near Tallahassee, at Sparr and other productive parts of Florida.

Another attempt is to be made to establish a steamship line to the Azores.

Railway building has almost ceased. The greatest new mileage during the last six months was in Georgia, 173. In Kansas there was not a mile.

The important statement is made by United States Consul Wildman, at Singapore, that if an American house were to be established in Singapore it would control at once not only all the shipments of tin to the United States, but the shipment of the \$11,000,000 of exports from the Straits Settlements to the United States.

The new timber dry dock at the Brooklyn Navy Yard, for which plans have been made, will cost about \$500,000.

Advices from Venezuela state that American exports to that country are now ahead of all others, their aggregate in the last fiscal year having been \$10,000,000. According to a correspondent of the Bureau of American Republics, this tendency toward American trade is due partly to irritating controversies with Great Britain.

The St. Clair tunnel is ready for traffic as soon as the approaches can be completed.

A prominent grain merchant in Toledo, Ohio, has just returned from England, where he has organized a company with a capital of \$2,500,000 to operate a line of steamers direct from Toledo and other Lake Erie ports to Liverpool. A branch line will run between New Orleans and Liverpool in the cotton-carrying trade.

Lake commerce is gaining constantly. New tonnage is being added and freights are well up, owing to the heavy demand for vessels to carry grain, ore and coal.

Harvard students have inaugurated a movement for the gratuitous instruction of mechanics and workmen in any special topic. Robert E. Ely is president of the organization.

British Honduras takes almost as much of the goods she imports from the United States as from the United Kingdom. Her total trade is about \$3,000,000 per annum.

**Imports and Exports of Iron and Steel.**—The Bureau of Statistics, Washington, has issued its report for the fiscal year ending June 30, 1891, giving the imports and exports of merchandise of the United States. The imports of iron and steel for the 12 months ending June 30, 1890 and 1891, are given below:

	Iron and Steel and Manufactures of:	
	1891.	1890.
	Tons.	Tons.
Iron ore.....	955,517	1,157,395
Pig iron.....	81,916	146,772
Scrap iron and steel, fit only to be remanufactured. . . .	56,559	38,859
Bar iron, rolled or hammered. . .	19,324	28,672
Bars, railway, of iron or steel, or in part of steel.....	134	250
Hoops or ties for baling purposes, barrel hoops and hoop or band iron or steel, flared, splayed or punched. . . .	11,896	19,920
Hoop, band or scroll iron or steel.....	3,308	8,351
Ingots, blooms, slabs, billets, and bars of steel, and steel in forms n. e. s.....	31,378	36,337
Sheet, plate and taggers' iron or steel—tin plates,terne plates and taggers' tin. . . .	454,589	308,599
Wire rods of iron or steel.....	50,439	62,347
Wire and wire rope, and strand, iron or steel. . . .	5,182	4,281
Manufactures of n. e. s.—		
Anvils.....	946	1,411
Chains ..	511	663



# The Iron Age

New York, Thursday, August 13, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## The Financial Outlook.

The financial situation continues to absorb the attention of the business world to the exclusion almost of all other subjects. The time is fast approaching for which general stringency has been predicted, and for which preparations have been made for so many months. The fact that call loans have been a drug in the market at 2 per cent. possesses little significance, because accommodation of this character is sought by the speculative element, which has done very little of late. For time loans the rate has been 6 per cent. on gilt-edged collateral. While the future holds out golden promises for the whole business community, the developments which the next month or two are to bring forth are what are troubling bankers, merchants and manufacturers. The drain of money to the West for moving the crops has already begun, and is expected to assume larger proportions in the near future. The New York banks have striven hard to prepare for it, the surplus reserves now being about \$10,000,000 larger than they were at the same time a year since. While, on the one hand, funds are being drawn for the crop movement, the time has not yet arrived when gold comes to us from abroad for that part of our agricultural produce which we are marketing in Europe. The decline in exchange is steadily bringing us nearer the gold importing point, but leading authorities among foreign bankers do not look for arrivals before September. Then a very large movement of the yellow metal to this country is anticipated, and increased business activity in all branches which depend upon the agricultural population as primary consumers is confidently expected. But it is feared that before the favorable conditions mature, before the revival has set in, we may have a few squally weeks.

Recent reviews of the wheat situation present the future in a very rosy light for the farmers in this country. The most striking of these has been made by William E. Bear, for *Bradstreet's*, who reaches the following conclusion: "If we allow average exports from India during the cereal year, including a portion of the surplus of next spring's wheat—say 33,000,000 bushels—and suppose that the United States will spare for Europe 144,000,000 bushels, making 177,000,000 bushels together, there will be, according to the estimated European deficiency, about 104,000,000 bushels to obtain from minor sources of supply outside Europe." It seems difficult to escape the conclusion that with so large a deficiency in Europe

our farmers will be able to place their surplus abroad at very good prices; in other words, command high figures for the whole of their crop.

It remains to be seen to what extent the unfavorable conditions abroad will lower prices of goods there, so that they will considerably lessen the cost of importation and interfere with our home manufacturers. In such a case the gold shipments might not be as large as is now expected. It is not believed that balances due us for agricultural products now going out will be settled to any considerable extent by the selling of securities, because the foreign markets have been pretty thoroughly drained of speculative and weak holdings of American bonds and stocks.

## Rebuilding the Navy.

More steel ships are wanted for the navy and the merchant marine alike. The demand is heard simultaneously in Congress, and out of Congress, by the people at large and by the public men and officials in authority. Merchants are no longer content to remain passive and supinely watch the successes of their rivals in trade, who occupy the ocean thoroughfares, aided by the wonderful developments in steam navigation. Within the past week the record has been made of a trip across the Atlantic by the White Star steamer *Majestic* in 5 days, 18 hours and 8 minutes, breaking the previous record of the City of Paris by 1 hour and 5 minutes, apparent time, and 36 minutes actual time. Within the time specified the ship ran 2960 miles, thus maintaining a continuous speed of 24½ miles per hour night and day for more than five days, a feat unprecedented in the annals of any motive machinery ever invented. In the naval marine the achievements are not less notable. While these facts are recorded with exultation, there is manifest a growing feeling of insecurity among the millions of people who are either directly or remotely interested in the great cities on our Atlantic seaboard and on the Pacific Coast, at points where enormous wealth is concentrated.

This feeling found expression at the banquet given by the New York Chamber of Commerce to the officers of the "white squadron" while on their visit in these waters. Rear Admiral Walker in his response to an introductory speech by the chairman said: "We are at the beginning of a new navy. We have made fair progress for the time in which we have been engaged in the undertaking, but we have a long road to travel before we possess a navy with which the country will be satisfied. We have the money necessary to build the new navy, we have the men, and we have the officers, and we have the ability to build." After referring to the encouraging progress made in forming a naval reserve for service in special emergencies, he added: "It does not seem so to the residents of New York, but it would be an easy task to lay it and our other seacoast cities under tribute to a foreign fleet of war vessels. I don't think the residents

of New York would like to have to put \$100,000,000 on board some foreign fleet as a tribute, and yet it would be quite easy to do. We'd pocket the insult and they'd pocket the money." Ex-Mayor Abram S. Hewitt, the iron manufacturer, promised Admiral Walker that a future Congress would give him all the money he wanted, saying, further: "The work of reconstruction of the American navy, in my opinion, was taken up as soon after the war as was possible—as soon, indeed, as it could be done without an absolute waste of public money. As soon as the results of experiments by other nations showed us how to go to work, we went to work to reconstruct our navy. We have made a good beginning. We now have acquired the mechanical and technical experience to produce the best results. It is difficult to comprehend the enormous steps which yet need to be taken in this direction before the work of rehabilitation and reconstruction is complete."

European nations, pressed by the necessity for warlike preparation, have expended enormous amounts in perfecting steamship and engine construction, ponderous armaments and shot-proof steel plates, which the American people may now, by arousing from their apathy, reproduce. It is a question for naval engineers and others best qualified for the task to determine how far it is best to advance in this direction, with due regard to the enormous current expenditures which must be assumed in maintaining an available naval force. Defensive preparations are called for rather than those of a strictly aggressive character. But in any case construction does not forbid a system of mercantile ships, convertible as an auxiliary naval power should occasion arise.

The times are prolific of inventions for saving fuel in steam raising and in metallurgical processes. These inventions are of two kinds. One class relates to devices for securing the more complete combustion of coal as it is burned in the usual way. The other class converts coal into gas, which is then used for fuel. Both have their special adaptations, and the field is very inviting for the efforts of the best mechanical and scientific talent. The most severe criticism which our foreign metallurgical friends passed upon us during their visit in October last was that American manufacturers as a class were very wasteful of fuel. Within the short period of time which has elapsed since then much progress has been made in fuel-saving appliances, and the prospects are very bright now that the occasion for such a criticism will be pretty thoroughly removed in the near future. It is not our purpose to refer by name to processes of great merit that have recently been brought out in this line. Several of them have already been described in our columns and there are more to follow. Manufacturers who have been taught the advantages in their operations of using gas for fuel are in a fair way to be supplied with very cheap manufactured gas, and those

who must use coal for firing will likewise have their wants well cared for in devices for securing perfect combustion, which, of course, means an important reduction in cost.

### The Lake Trade Reviving.

The navigation interests of the great lakes have grown to be an important factor in the business of the country. The gloomy outlook for vesselmen last spring was therefore a very serious matter to a much wider circle than the owners of vessels and the men they employed. Predictions were quite freely made at that time by the best-informed men engaged in lake traffic that the business had been overdone; that too many large boats had been built and put in service in recent years, and that dullness and unremunerative rates would be the rule probably for several seasons, until the equilibrium in the carrying trade should be restored. These depressing prognostications seemed quite reasonable, in view of the fact that the lake shipbuilders had enjoyed several years of uninterrupted prosperity, as a result of the pressing demand for iron and steel vessels for lake and even for ocean service, and had introduced improvements in equipment which greatly increased the carrying capacity of freighters beyond the naked addition to tonnage. The navigation season had also opened with a most discouraging prospect. Ore docks were full to overflowing at lower lake ports, and the iron trade was so depressed that the stock of ore precluded all hope of shipments of any considerable quantity being needed for several months. There was practically no grain to be transported, the lumber trade was stagnant and miscellaneous freight offered a very slender basis upon which to rest the expectations of a fair return on money invested in shipping.

A remarkable change has occurred, however, within the past fortnight. Vessel owners are no longer seeking business at any rates that shippers are willing to name, but find themselves in a position to again dictate terms. Grain shippers have been badly squeezed in endeavoring to fill contracts for Eastern delivery, which they had taken on the presumption that they would get very cheap lake rates. The demand for tonnage suddenly rose to a point which absorbed the available capacity of the modern built boats, and shippers were forced to pay more than they had dreamed that rates could possibly rise to this season. The iron ore mining companies also became more urgent for freight room under the pressure of a better demand for ore, and Escanaba rates at one time advanced 20 cents per ton in 24 hours, with vesselmen standing out for still higher terms. At present writing the prospects are very strongly in favor of a sufficient lake traffic to keep vessel owners in a good humor for the remainder of the season.

Contracts for new lake vessels are already looming up under the improving outlook. For six months the lake ship-

yards, except the McDougall yard, have received no new orders for iron and steel vessels, and one after another has been obliged to close down and discharge its workmen, as old contracts were completed. Experienced marine men are strongly inclined to expect a large increase to be made in lake fleets the coming winter. Vesselmen will feel so happy over the unexpected favorable turn in a dull year that they will prepare to take advantage of next season's prosperous outlook. They say that the Chicago elevators will be filled to their capacity this winter with grain waiting shipment at the opening of navigation in the spring, and that the demands of the blast furnaces for ore will be in excess of the quantity that can be carried this year from the mines, so that next spring will find the Lake Erie docks bare, thus insuring a good season for lake freighters.

### Spain's Mineral Exports.

The official statistics of the exports of Spain have just come to hand, revealing in some branches the effects of the general business depression. The decline has been most striking in iron ore, the exports for the first half of 1891 having been only 2,198,789 metric tons, against 3,054,229 tons during the same period last year and 2,656,170 tons during the first six months of 1889.

Copper shows an improvement in pyrites, the figures for the six months of the three years 1891, 1890 and 1889 standing as follows: 385,937, 328,181 and 475,022 metric tons. During the same periods the exports of copper matte were 10,689, 13,975 and 7658 metric tons. Copper precipitate stood 17,456 metric tons for the first six months of 1891, to 21,281 metric tons in the corresponding period of 1890, and 14,771 metric tons in 1889.

Aside from some lead ore, the lead exports of Spain are in the form of base bullion, which is argentiferous, and refined lead. The total quantity has not varied much, being as under:

#### Spanish Lead Exports for Six Months.

	1890.	1890.	1891.
Base bullion....	34,473	42,716	35,435
Refined lead....	30,489	27,452	31,907
Total.....	64,962	70,168	67,342

There has therefore been some increase in the quantity of lead refined in Spain.

Spain is a source of supply of some consequence for the European manufacturers of spelter. In the first six months of 1891 the shipments were 4947 tons of blende and 15,820 tons of calamine. In the preceding year for the same period they were 9030 and 19,636 tons, and during the first six months of 1889 4696 and 12,721 tons. The exports of spelter were 987,712 and 698 tons respectively.

Quicksilver exports dropped from 1,872,229 kg. in the first half of 1889 to 947,002 kg. in the corresponding period of 1890, to rise again this year to 1,822,823 kg.

The total valuation of the exports of ores and metals exported from Spain during the first half of 1889 was 111,742,602

pesetos. They rose to 115,944,592 pesetos in 1890 and declined again to 102,116,988 pesetos this year.

The boiler makers of Chicago were decidedly stirred up last week by the report that a "ring" to secure municipal contract work had been discovered. It was a tempest in a teapot. The allegation was made that the specifications were so drawn up that only one firm in the city could supply the boilers called for. It appears that Otis steel and machine riveting were specified, and the wrath of the boiler makers who prefer to use other steel and to employ hand riveters was thus aroused. Insinuations were even made in some of the Chicago papers that Otis steel is an English product, probably because the Otis Steel Company's stock is largely owned in England, although the works are in Cleveland, Ohio, as every boiler maker must know. Three firms bid on the original specification and two more bid after the specifications were changed to permit wider competition. It would appear from the facts that have been drawn out in the controversy over this question that there are five firms in Chicago possessing modern facilities for the manufacture of boilers.

Our Western and Southern friends are adopting a line of argument in connection with schemes for extending foreign commerce which is to be deprecated. The inference to be deduced from many of the statements made is that commerce carried on by our Atlantic ports is as much a proper subject for their competition as commerce which is wholly foreign. Through the efforts of enterprising American citizens, who have been entirely unaided by subsidies or liberal mail appropriations, a great foreign trade has been built up between some South American countries and ports on our North Atlantic seaboard. Commerce of this character should not be disturbed by the intervention of the National Government. It would be an injustice to these enterprising Americans if the new subsidy payments should be so manipulated that this trade would be diverted to Gulf ports in the interest of a new set of capitalists who lacked the courage to enter the field until they were able to secure Government backing. The old lines should be strengthened and not interfered with. The field is sufficiently large to permit new lines to be established which will divert trade now largely in foreign hands into American channels. The Post Office department has a delicate question on its hands in the proper adjustment of these matters.

The Association of Copper Manufacturers of the United States held a meeting at the Windsor Hotel, New York, August 6. It is understood that the meeting was merely informal, and that no action was taken toward improving the present condition of the sheet copper market. No change whatever was made in the list of December 5, 1890, governing the prices of sheet and bolt copper, copper bottoms, pits and flats.



## CORRESPONDENCE.

## Basic Steel in the South.

To the Editor: I have noticed from time to time what men claiming to be experts on the basic process say about its adaptation, or rather want of adaptation, to the use of ores and metal of different sections of the South, and am surprised to find so great a lack of knowledge on the subject; and now in your editorial on page 141 of *The Iron Age* you say, "The Birmingham district has a cheap raw material, but it is not well adapted to the basic process. Chattanooga has dear iron, but it is better suited to its purposes. Southwest Virginia makes pig ideally low in sulphur and silicon, but has so little phosphorus that it must look to the basic open hearth." Permit me to say that I see no difficulty in the practice of the basic Bessemer process either in Birmingham district or in Southwest Virginia. The men who say it cannot be done are honestly saying what they think. The plant and form of practice of the basic process may vary at different localities in the South, but with a proper plant and organization there will be no difficulty in making a prime quality of basic steel at low cost in the different iron centers of the South. And I would like to build a basic Bessemer plant in Southwest Virginia and show the experts how to work the metal made from their low phosphorus ores.

JACOB REESE.

400 Chestnut street, Philadelphia,  
August 8, 1891.

## Extending American Trade.

Trade with Mexico is spoken of by Frank G. Carpenter, who has traveled extensively through that country and volunteers many practical suggestions for the extension of American influence. "At present the chief and only things in which we have the lead are coal oil and machinery. American sewing machines you find all over Mexico, and you will see American threshing machines and wagons everywhere coming in. A Mr. Rose, who represented a manufacturing company of Buffalo, stated that he had sold \$200,000 worth of sugar mills and other machinery during the past year, and Seagur, Guernsey & Co. of Mexico City, who handle all kinds of American goods, are said to have a good trade in electrical plants, steam engines of various kinds, typewriters, plows and American paper. This firm is the biggest American firm in Mexico. It has a house in New York, and its bidders have studied the trade and are introducing all kinds of American goods."

James G. Peterson, who travels in South America and the Central American States for a large New York house, refers to the efforts of foreign traders, chiefly English and Germans, to foster prejudice against American goods. He says: "They are beginning to see where the Americans are cutting into their business and profits. In the last four years all the countries south of the United States have been visited by numbers of representatives from American houses in search of trade. They have secured considerable business, and have been making a strong effort to please the people. Goods have been put up in small packages, so that they can be easily carried over the mountains on the backs of mules or transported by boats on many of the shallow rivers. The Americans have trusted the people and given them time to pay their bills."

The last dividend of the Calumet and Hecla Mining Company carries the total to \$36,350,000.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., August 10, 1891.

The Board of Ordnance and Fortification having concluded their labors in reference to the examination of the bids and award of the contract for the 100 breech loading 8, 10 and 12 inch army guns at their meeting in New York submitted their report, which was approved at the War Department to-day. As anticipated in *The Iron Age*, the board favor the award of the contract to the Bethlehem Company. Although they made some modifications of the Bethlehem bids, the law authorized them to take such action in the interests of the Government as well as the manufacturers. The bids were opened July 18. *The Iron Age* printed at the time the official abstract of the bids from the Ordnance office.

The Board of Ordnance and Fortification set forth their opinion by way of preface to their action, as to the interpretation of the laws, as follows:

The board is of the opinion—1, that the interest of the United States does not require that guns should be turned out at a rate materially greater than carriages and emplacements can be provided, suitable appropriations therefor being made, to make them available for use.

2. That the interest of the United States does not require that guns should be procured by contract to the displacement of the plant and skilled labor already provided therefor at the army gun factory at Watervliet.

3. That considering the necessary appropriations for maintenance and operation of the gun factory, for additional forgings to keep it in operation, for carriages and emplacements for mortars and carriages therefor and other necessary objects of defense and armament, it is not for the interest of the United States to hasten the contract guns to a degree likely to cripple appropriations for these other necessary objects.

4. That it is for the interest of the United States to accept that bid of the Bethlehem Works which, conformably with the foregoing propositions, will secure the establishment of a private gun plant within a reasonable period with the least cost for plant to the United States.

5. That Schedule E, in the opinion of the board, is the schedule which most nearly conforms to these conditions. The board therefore, in conformity with the duty imposed on it by the Fortification acts approved August 18, 1890, and February 24, 1891, adjudges the prices named in the proposals of the Bethlehem Iron Company of July 11, 1891, under Schedule E, to be fair to the manufacturer and for the interest of the United States.

In conformity with this strain of abstract philosophy the board recommends as follows:

That a contract be entered into with the Bethlehem Iron Company for the manufacture of 100 breech loading, single-charge, built-up, forged-steel rifled guns under Schedule E of its proposals of July 11, 1891, viz: Twenty-five 8-inch breech-loading rifles, each for \$17,246.55, including ten rounds of ammunition complete; the first gun to be manufactured to be the type gun, which shall be subjected to such tests as the board shall hereafter prescribe; that the ammunition required for these tests over and above the ten rounds supplied with the gun shall be furnished by the company at the price of \$71.00 per round.

Fifty 10-inch breech-loading rifles, each for \$35,747.58, including 10 rounds of ammunition, with the same provisions as to tests and extra ammunition, the latter to be paid for by the company at \$131.06 per round.

Twenty-five 12-inch breech-loading rifles, each for \$54,473.23, with the same stipulations as to type gun, tests, ammunition, &c., the extra rounds to be paid for by the company at \$217.06 each.

The Bethlehem Iron Company, before the contract is made, should submit for the approval of the board detailed drawings of each caliber of gun contemplated under its proposal. The physical qualities of the metal, the tests to be made of it and all details of assembling the parts, and all points relating to the construction of the guns required to carry out the proposal, should be approved by the Chief of Ordnance before being submitted to the board.

The board is further of the opinion that the Chief of Ordnance should be authorized to make agreement with the contractor, so as to

admit of such changes being made from time to time in the guns to be furnished as may be necessary to keep abreast of any improvements that may hereafter be attained in gun construction.

Under Schedule E Bethlehem Company bid the guns are to be furnished as follows: Eight-inch type gun in 730 days; the other guns in such regular periods that the twenty-fifth shall be delivered in 2433 days after notification of the acceptance of the type gun. Ten-inch type gun in 882 days; the others in regular periods so that the fiftieth shall be ready in 3407 days after the acceptance of the type. Twelve inch type gun in 1095 days; the others in such regular periods that the twenty-fifth shall be completed in 3194 days. The difference between the bid accepted by the board and that submitted by the company lies wholly in the price to be paid for the three type guns.

The bid was for a type gun in each class at a much larger figure than for each succeeding gun of the same class, but the board considered that there was no necessity for such a difference. The higher price for the type gun includes the cost of the regulation amount of ammunition required for the testing of guns, as follows: Three hundred and fifty rounds for an 8-inch gun, 300 rounds for a 10-inch gun and 250 for a 12-inch gun. Such tests usually weaken and nearly destroy the gun. It was deemed to be for the interest of the United States that the type guns, being of a normal and common pattern, should not be put through such a high number of test rounds, but that ten rounds would probably be quite sufficient, thus testing the guns satisfactorily, while leaving them fit for future use. On that basis, therefore, the cost of the type gun was in each case scaled so as to be equal to that of the other guns, and but ten rounds of ammunition was required. The board then reserves the right to make further tests if they should be thought necessary. The additional cost of the type guns in each instance corresponded with the price of the extra ammunition. The appropriation is \$4,500,000, and the figures stated by the board will make the guns cost \$3,580,373.35.

The papers submitted by the board are very voluminous, going into a great amount of detail. They will be prepared for careful printing in the official report.

## A Chicago Iron Failure.

The National Forge and Iron Company, with mills at East Chicago, made an assignment on the 8th inst. in favor of Gilbert B. Shaw, president of the Chicago Trust and Savings Bank, as assignee. The liabilities are estimated at \$400,000 and the assets, including \$85,000 accounts and bills payable and the plant, covering 11.7 acres, are placed at the same amount. The reason for the failure given is the dullness of the market and the recent failure of the United States Rolling Stock Company, in which the Forge Company were caught to the extent of \$50,000. All this tended to injure the credit of the company, and on Friday a meeting of the directors was called and it was unanimously decided that, as the company was in an embarrassed condition and was desirous of paying all creditors, an assignment be made, with no preferences, of all the buildings, forges, rolling mills and machinery.

On March 12, 1889, the National Forge and Iron Company were organized with a capital stock of \$250,000. The Corporation Bureau shows that the stock was subscribed for as follows: Marks Swarts, \$110,000; Seymour Swarts, \$5000; John E. Qualy, \$10,000, and the latter's father, John Qualy, \$125,000. The directors were Mr. Qualy and the Messrs. Swarts, while the present officers are: Marks Swarts, president; Frank B. Felt, vice-president

and general manager; Seymour Swarts, secretary, and N. Davis, treasurer. Assignee Shaw gave bond in \$700,000, with Franklin H. Head and Frank Jocelyn as sureties. Judge Brown, sitting in the County Court, authorized the assignee to continue business and to complete unfinished work. Later in the day Moses & Pam, representing S. Morris & Co., creditors, procured a citation against Swarts, Qualy, and the officers, directors and agents of the company to appear Monday to submit to the usual examination. Before the assignment was filed attachment suits were filed in the Circuit Court against the company by the Chicago Machine and Power Company to recover \$385 and by the Wagner Palace Car Company on a demand for \$481.

In local iron circles much sympathy is expressed for President Swarts, who had by assiduous application to business acquired a handsome competence in the scrap-iron trade before engaging in the manufacture of iron. It is possible that the creditors of the company will arrange to give him an opportunity to retrieve the company's misfortunes. An honorable business career should not be irreparably clouded.

### Pig Production Stationary.

During July the principal features in the production of pig iron have been a decline in the output of anthracite iron nearly offset by a larger make of coke pig. The latter is now well up to the maximum, and shows few indications of a change for the present.

The weekly product of all the furnaces on August 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
August 1.....	296	169,576
July 1.....	293	171,115
June 1.....	258	146,782
May 1.....	227	115,580
April 1.....	226	113,483
March 1.....	217	104,536
February 1.....	204	146,050
January 1, 1891.....	302	167,599
December 1, 1890.....	340	183,846
November 1.....	342	177,958
October 1.....	356	170,263
September 1.....	323	171,776
August 1.....	324	164,798
July 1.....	336	175,727
June 1.....	345	180,791
May 1.....	344	180,069
April 1.....	344	178,474
March 1.....	343	180,391
February 1.....	334	173,651
January 1.....	333	174,038
December 1, 1890.....	328	169,151
November 1.....	323	165,225
October 1.....	311	151,067
September 1.....	294	134,068
August 1.....	286	145,899
July 1.....	285	141,419

We present in this issue of *The Iron Age* a colored plate showing the fluctuations in monthly capacity for a series of years. The chart will be found interesting in bringing out clearly how overwhelming is the influence of the coke furnaces in shaping the iron product of the country.

The status of the anthracite furnaces was as follows:

Anthracite Furnaces, August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	19	8	3,038	11	3,298
New Jersey.....	12	3	1,208	9	2,913
Spiegel.....	3	3	175	0	0
Pennsylvania:					
Lehigh Valley.....	47	30	10,069	17	7,430
Spiegel.....	1	1	58	0	0
Schuylkill Valley.....	30	16	7,372	14	4,532
U. S. Susquehanna Valley.....	9	6	2,110	3	2,415
L. S. Susquehanna Valley.....	17	9	3,211	8	3,400
Lebanon Valley.....	16	12	5,610	4	1,440
Totals.....	154	88	32,800	66	25,478

For a number of months past our records show the following:

	Furnaces in blast.	Capacity per week.
August 1.....	88	32,800
July 1.....	92	37,892
June 1.....	91	36,561
May 1.....	90	35,381
April 1.....	91	36,594
March 1.....	93	38,543
February 1.....	95	40,212
January 1.....	101	43,166
December 1, 1890.....	105	43,474
November 1.....	104	42,141
October 1.....	100	38,627
September 1.....	104	39,115
August 1.....	106	41,018
July 1.....	112	42,543
June 1.....	117	45,142
May 1.....	123	46,912
April 1.....	119	46,110
March 1.....	115	45,790

It will be observed that there has been quite a considerable falling off in the capacity of anthracite furnaces now running. New York and New Jersey maintain the modest rate of production which they have upheld for some time past. There have been few changes in the Lehigh Valley, Keystone having blown out and one of the Saucon furnaces having blown in. In the Schuylkill Valley current production has been lessened by the stoppage of Pioneer and the blowing out for repairs of Swede Furnace. We may note in this connection that the second stack at the Swede is progressing well, and is expected to be completed early in November. In the Lower Susquehanna one of the furnaces of the Pennsylvania Steel Company has stopped.

The position of the charcoal furnaces was as follows:

Charcoal Furnaces, August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	5	410	9	620
New York.....	8	2	245	6	525
Pennsylvania.....	15	4	335	11	640
Maryland.....	6	2	192	4	385
Virginia.....	18	10	210	8	750
Ohio.....	10	7	545	3	195
Kentucky.....	1	1	104	0	0
Tennessee.....	8	4	963	4	410
Georgia.....	4	4	447	0	230
Alabama.....	13	6	1,479	7	1,290
Michigan.....	27	11	3,433	16	4,490
Missouri.....	1	1	234	0	234
Wisconsin.....	5	3	1,545	2	1,290
Texas.....	3	3	618	0	0
California.....	1	0	0	1	120
Washington.....	1	0	0	1	170
Oregon.....	1	1	220	0	0
Totals.....	137	54	10,980	83	11,408

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week.
August 1.....	54	10,980
July 1.....	50	10,801
June 1.....	44	10,056
May 1.....	39	9,730
April 1.....	41	9,295
March 1.....	51	10,890
February 1.....	56	11,368
January 1, 1891.....	59	12,280
December 1.....	67	12,738
November 1.....	70	13,282
October 1.....	66	13,389
September 1.....	63	12,904
August 1.....	59	10,745
July 1.....	61	12,511
June 1.....	61	12,312
May 1.....	62	10,695
April 1.....	52	10,804
March 1.....	59	12,606
February 1.....	58	11,378
January 1, 1890.....	50	11,485
December 1.....	66	12,779
November 1.....	67	12,298
October 1.....	63	12,047
September 1.....	60	11,327

In Massachusetts the third Richmond furnace is now also producing. In Maryland Stickney was started on the 15th ult. Madison, in the Hanging Rock region, completed its repairs and resumed on the 1st of this month. Quick work in repairing was done by Midland Furnace, in Missouri, which blew out on the 2d ult., and resumed on the 1st inst. In Alabama both Warner furnaces are now running. Lone

Star, in Texas, has been troubled by shortage of charcoal, and has been forced to bank.

The position of the coke furnaces was as follows on the 1st inst.:

Coke Furnaces, August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	6	3	3,043	3	2,065
Pennsylvania:					
Pittsburgh district.....	25	23	30,958	2	2,369
Spiegel.....	1	1	885	0	0
Shenango Valley.....	18	15	11,122	3	1,752
Juniata and Conemaugh Valley.....	19	7	4,971	12	3,779
Spiegel.....	1	0	0	1	400
Youghiogheny Valley.....	5	3	1,350	2	1,132
Miscellaneous.....	4	3	1,548	1	1,142
Maryland.....	4	2	3,080	2	1,890
West Virginia.....	4	2	2,110	2	1,137
Ohio:					
Mahoning Valley.....	15	11	9,523	4	1,850
Central and Northern.....	16	11	9,493	5	4,050
Hocking Valley.....	14	2	950	12	3,247
Hanging Rock.....	15	10	1,904	5	1,582
Indiana.....	2	1	158	1	223
Illinois.....	18	13	14,394	5	5,150
Spiegel.....	1	1	1,050	0	0
Wisconsin.....	4	3	2,205	1	572
Missouri.....	6	0	0	6	3,340
Colorado.....	12	1	468	1	450
The South:					
Virginia.....	14	11	6,455	3	923
Kentucky.....	4	2	855	2	560
Alabama.....	37	19	13,213	18	9,237
Tennessee.....	12	10	4,601	2	850
Georgia.....	2	1	775	1	303
North Carolina.....	1	1	125	0	0
Totals.....	250	154	125,736	96	47,543

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
August 1.....	154	125,736
July 1.....	150	122,422
June 1.....	124	100,165
May 1.....	98	70,529
April 1.....	96	67,570
March 1.....	113	85,063
February 1.....	125	94,473
January 1, 1891.....	143	112,193
December 1.....	168	127,634
November 1.....	168	125,555
October 1.....	179	127,247
September 1.....	156	119,797
August 1.....	150	113,040
July 1.....	163	120,673
June 1.....	167	123,340
May 1.....	169	122,450
April 1.....	173	121,590
March 1.....	160	122,566
February 1.....	149	118,568
January 1, 1890.....	169	119,396
December 1.....	162	116,319
November 1.....	160	112,269
October 1.....	154	102,454
September 1.....	141	96,744

The coke furnaces have apparently settled down to production at a rate closely approximating full capacity under normal conditions. The increase during the past month has been chiefly among furnaces in the West. From a few sources come to us reports that plants will be kept idle until the market shows a notable improvement.

In New York and in the Pittsburgh district there have been no changes to record. In the Shenango Valley Etna Furnace has gone out, and Keel Ridge will remain idle until the price of pig iron warrants a reconstruction of the plant. In the Juniata and Conemaugh valleys the two Blair furnaces of the Cambria Iron Company have gone out of blast. In the Youghiogheny district Dunbar started its second furnace on the 14th inst. The Maryland Steel Company have blown in a second furnace at their Sparrows Point plant. In the Mahoning Valley Falcon Furnace has started after relining, while in the Hocking Valley production has narrowed down to the output of the Bessie and Glasgow furnaces since the blowing out of Akron and Winona. In the Hanging Rock region Belfont ran during a part of July. The largest increase in productive capacity has taken place in Illinois, where the Illinois Steel Company are now



operating three of the new furnaces at South Chicago, the entire old South Chicago plant, all the four furnaces at Union, one at Joliet and one at Chicago. In the South Virginia has added the second Longdale, but Princess has stopped for repairs, while Alabama has been decreased by the blowing out of Hattie Ensley, the famous Southern stack which has made 68,500 tons in 18 months; by the stoppage of No. 2 Woodward, compensated for to a considerable extent by the resumption of Anniston and No. 9 Alice. In Tennessee Chattanooga is producing again.

The anthracite furnaces have unloaded stocks considerably during the month just closed, while the charcoal producers are carrying about the same amount as reported last month. In certain sections the stocks of coke iron have accumulated, but this has been offset by a reduction in other districts, so that the amount of iron held by the coke furnaces may be said to be about the same as for July 1. In the Lebanon Valley most of the furnaces report empty yards, and the same is true of Illinois, where the 13 active stacks of the Illinois Steel Company report no stock on hand. In the Shenango Valley about the same amount of iron is carried as last month. There has, however, been a slight increase in Mahoning Valley, where the furnaces are now well at work, and where nine active stacks hold 16,434 tons this month, compared with 12,435 tons reported by the same furnaces July 1.

Michigan and Wisconsin continue to contribute largely to the stocks of charcoal iron, while 11 active and 3 idle furnaces in Tennessee, Alabama and Georgia report a stock on hand of 36,570 tons.

The largest holders of anthracite iron are the furnaces in New Jersey, where 44,874 tons are reported by two active and four idle furnaces which blew out within the past month or two.

Coke furnaces to the number of 102, of which 14 were idle on the 1st inst., whose combined capacity is 77,490 tons per week, are carrying 154,128 tons of stock. Among the anthracite producers 29 active and 12 idle furnaces, having a weekly capacity of 16,348 tons, hold 93,694 tons of iron; while stock to the amount of 163,631 tons was reported by 35 active and 15 idle charcoal furnaces, whose productive capacity is 11,128 tons per week.

The Joliet Enterprise Company's new plant, which will shortly be erected at Joliet, Ill., will be several times the size of the old one destroyed by fire in the spring. It will be located on land owned by a syndicate who propose to secure other factories to settle in the same vicinity. The Enterprise Company will have 20 acres, 2 of which extend along the Illinois and Michigan Canal, while the Rock Island railroad runs through the property. A recent issue of the Joliet News says: The plant will be so arranged that each building can be enlarged when necessary, and a rod mill is among the possibilities of the near future. At the start about 300 men will be employed. There will be an 800 horse-power engine and a smaller one for the electric light plant. The buildings will be principally of brick. The floor space will be very nearly 125,000 square feet, the dimensions of the several structures being as follows:

	Feet.
Boiler room.....	40 x 70
Cleaning room.....	40 x 110
Drawing room.....	60 x 207
Machine shop.....	60 x 80
Engine house.....	60 x 114
Annealing room.....	60 x 135
Galvanizing room.....	60 x 160
Plain wire storage room.....	60 x 307
Barbed wire and nail machine room.....	60 x 307
Storage warehouse.....	120 x 400
Dip house and carpenter shop.....	...

PERSONAL.

Joseph Ralph, a prominent member of the Amalgamated Association, has just received the appointment of superintendent of the industrial department of the Illinois Steel Company and has accepted the office. This is the second mill to create that position, Carnegie, Phipps & Co. being the first. His duties will be similar to those of William Martin of the Carnegie concerns.

John J. Fisher, president of the Fisher Pipe Mfg. Company, is enjoying his fourth trip to Europe.

Louis Bothas, who is connected with the German railway service, has returned to Europe after a prolonged study of American methods of railroad management.

OBITUARY.

JAMES R. OGDEN.

James R. Ogden, president of the Knoxville Iron Company, Knoxville, Tenn., has died at the age of 55 years. The deceased was born in Lincolnshire, England, and came to this country when about 15 years of age, settling in Ohio. He was educated at the Hudson College, in that State, and after serving in the civil war took up his residence in Knoxville. He was connected for a while with the East Tennessee National Bank, and at one time held the position of general freight agent of the East Tennessee system of the East Tennessee and Georgia Railroad. Later he became manager of the pooling interests of several combined roads, and was prominently connected with the Southern Railway and Steamship Association. Mr. Ogden was one of the best known business men of Knoxville, and was held in high esteem by all who knew him. He leaves a wife and six children.

CHARLES G. HARMER.

Charles G. Harmer died August 10 at his home, No. 113 East Thirty-seventh street, in the seventy-fifth year of his age. He was the senior member of the hardware firm of Harmer, Hays & Co., No. 72 Beekman street. Mr. Harmer was born in New York, and at an early age entered the crockery house of Ebenezer Caldwell, which was afterward that of Robert C. Wetmore & Co. In 1838, with James McGowan, he started the firm of which he died a member under the name of Harmer & McGowan. He leaves a widow and seven children, three sons and four daughters. He was a director of the Nassau Bank and an elder of the Brick Presbyterian Church in Fifth avenue.

Locomotives of New Pattern.—The Chicago, Milwaukee and St. Paul Railway Company are building at their Milwaukee shops two new engines which promise a revolution in locomotive building. The engines consume their own smoke and have no smokestack. They are fitted up with an electric headlight, which is placed on a stand immediately in front of the boiler, thus giving the engineer an unobstructed view of the line ahead. The drive wheels are larger than on the ordinary locomotive and intended for greater speed. The new engines are particularly designed to furnish power for lighting passenger trains with electricity and for furnishing steam heat. These engines will be used on the run between Milwaukee and Chicago, and it is intended to reduce considerably the best time now made. They are designed and being built under the personal supervision of A. J. Smith, a practical engineer from the shops of the Pennsylvania Road at Fort Wayne.

MANUFACTURING.

Iron and Steel.

At the works of the Norristown Steel Company, near Norristown, Pa., active preparations are going on for starting the works at an early day. One steel furnace is entirely completed and is now being dried out, while the foundations for a second furnace are laid. The different appliances of the works have been tested to the entire satisfaction of the management.

Enough puddlers having presented themselves to start four furnaces at the works of S. R. Seyfert & Bro., at Seyfert's Station, Pa., an attempt was made to start the rolling mill, which has been idle for four months, but the firm was prevented from starting up on account of trouble with the rollers, who refused to go to work, and the mill remains closed.

At the regular annual meeting of the stockholders of the Old Dominion Iron and Nail Works Company, recently held at Richmond, Va., the following officers were re-elected: Arthur B. Clarke, president; Douglas Baird, vice-president, and G. W. Catlett, secretary.

No. 4 Furnace of the Sloss Iron and Steel Company, Birmingham, Ala., was blown out on the 22d ult., but its place was filled on the 31st by the blowing in of No. 3 New Birmingham stack. The latter has been thoroughly repaired and remodeled, and is now expected to do much superior work. The low bosh and large crucible principle has been carried out in her new lines, the bosh lowered 14 feet and the hearth increased 18 inches over the Gordon lines. Sloss No. 1, which has been running on similar lines since November, is working very satisfactorily. For the ten days ending July 31 this furnace averaged 116.9 tons per day, which is 43.5 above the average of its last blast. No 2 stack was shut down for repairs during the last ten days of July, and its inwall, which was badly cut by the stock, was repaired from a point about 21 feet down, and a new bell and hopper put in. This involved considerable labor, but was necessary in order to keep the furnace in blast. This furnace is now on the last quarter of a three years' blast, but E. A. Uehling, the furnace manager, expects another eight months' or year's acceptable work from it.

Stack No. 4 of the Allentown Iron Works, Allentown, Pa., has blown out for repairs.

The Franklin Iron Mines, at Franklin Iron Works, N. Y., have closed down, and the furnace will blow out about the 15th preparatory to making general repairs and enlarging the works. About three months will be required to make the improvements.

It is currently reported that the Cambria Iron Works are contemplating the rebuilding of the wire works at Johnstown which were destroyed by the flood. It is stated that plans have been completed for a wire drawing mill 400 x 50 feet, and that the works will be built at once at a cost of \$1,000,000.

The Alan Wood Iron Company of Conshohocken, Pa., are building an extension to their mills. A 500 horse-power engine will shortly be put in place.

The mill of the Catasauqua Mfg. Co., at Catasauqua, is now running some of its departments with non-union men. Thirteen puddling furnaces are full handed and a bar and a plate mill are working.

Work on the construction of the West Superior Furnace, at West Superior, Wis., has been suspended pending the construction of the steel works. Operations will be resumed in about four months, and it is expected to have the furnace completed in about a year.

It is reported that the Kutztown Furnace, at Kutztown, Pa., one of the five stacks of the Philadelphia and Reading Coal and Iron Company, is to be rebuilt at a cost of \$60,000.

The Bessemer steel works department of the Troy Steel and Iron Company, Troy, N. Y., has resumed operations, after an idleness of two weeks for repairs.

The sheet mill department of the Reading Iron Company, Reading, Pa., has shut down for a period of three or four weeks, during which time necessary repairs will be made.

Machinery.

Mr. Hunter, proprietor of the Hunter Tool Company, and Mr. Tea have purchased M. B. Lee's branch store at New London, Ohio. Both formerly lived at Monroeville, Ohio.

The Blymer Ice Machine Company, doing business in Cincinnati, made an assignment for the benefit of creditors. The company have an extensive trade all over the United States and in South America. The receivers

are Edward Worthington and Fred. Bussey. Liabilities, \$330,000; assets estimated at \$600,000. The assignment was voluntary and was done in order to effect a speedy reorganization of the company.

The Bay State Iron Works of Erie have changed hands, now being operated by a new company, with Mr. Noble as manager.

The H. F. Watson Company of Erie are erecting a large addition to their works. This is the only manufactory of asbestos goods of note outside the combination.

Four large cylinders to be used in the Government vessel being built at Cramps' Shipyard, Philadelphia, have just been completed by the Gray's Ferry Foundry and Boiler Company. These castings weigh upward of 11,000 pounds. They have secured the order for four more which are now being rapidly pushed through.

The W. H. Warren Machine Tool Works at Worcester, Mass., have received a \$25,000 contract for building machinery for the Watervliet Arsenal at West Troy, N. Y.

The H. Nadig & Bro. Mfg. Company of Allentown, Pa., long known as manufacturers of mining machinery, are rearranging their plant to increase their facilities for turning out their specialty—a new self-contained automatic cut-off steam engine for medium and high speed.

The plans adopted for the new buildings of the Hanover Foundry and Machine Company, at Gettysburg, Pa., embrace a machine shop 90 x 140 feet and a foundry 60 x 70 feet, both of brick.

Several satisfactory contracts for architectural iron work and columns are keeping the Allentown Foundry and Machine Company of Allentown, Pa., busy at present; yet they find time to make for the Jackson Architectural Iron Works of New York a machine for trimming cast columns that is above the average in size and capacity. It will be capable of trimming a cast column 25 feet long and 74 inches in diameter.

The E. Walker Tool Company of Erie have commenced the manufacture of the Kennedy slide-valve engine, adding one more to the long list of engine manufacturers in that city.

The Excelsior Iron Works, Chicago, will erect a five-story machine shop, 74 x 91 feet, at a cost of \$40,000.

The Carroll-Porter Boiler and Tank Company of Pittsburgh, Pa., are increasing their capital stock from \$50,000 to \$100,000. They have been running about a year and a half, and have already secured a large trade, embracing trade with South America and Cuba, besides an extensive business in this country. They are at present manufacturing and shipping boilers to California for the sugar industry of that State. This is quite an opening, as the sugar manufactured on the Pacific Slope has increased wonderfully in the last few years and threatens the Eastern manufacturers.

The Buffalo, N. Y., Steam Forge Company, which has been operating the Sayre Forge, at Waverly, N. Y., has decided to remove the latter works to Buffalo, where the main plant is located.

On the 8th inst. the Ball Engine Company of Erie, Pa., shipped eight carloads of machinery to the Key West Gas and Electric Light Company of Key West, Fla., consisting of three large engines, two boilers, pumps, heaters, condensers, piping, &c.

#### Hardware.

The annual meeting of the Dunn Edge Tool Company, Oakland, Maine, was held on July 29. The following officers and directors were elected for the ensuing year: R. W. Dunn, president; John Ayer, treasurer; A. R. Small, clerk, and R. W. Dunn, John Ayer and W. M. Dunn, directors.

The Geneva Tool Company, Geneva, Ohio, advise us that the demand for their goods both from this country and abroad has been such as to necessitate an enlargement of their manufacturing capacity. They are accordingly placing in their factory two new boilers of 225 horse-power and a 200 horse-power engine, and erecting two two-story brick buildings, 40 x 90 and 30 x 70 feet, in consequence of which their works have been shut down until September 1. With these increased facilities and new machinery recently purchased the company expect to be able to turn out goods of the best quality with desirable promptitude. The company have been in business since 1845, and have for a long time been compelled to run at night to keep up their orders.

The Egan Company, Cincinnati, Ohio, are enjoying a very large demand for their well-known wood-working machinery not only from all sections of the United States, but also

from Europe, South America, Australia, &c. The company call attention to the fact that this gratifying condition of things has been brought about by judicious advertising and the energetic efforts which have been made to build appliances of the most advanced type.

The Columbia Grey Iron Company, Columbia, Pa., have received their charter and will at once commence building operations. The company hope to be in a position to place goods on the market for the late fall trade. H. S. Stauffer, president of the Grey Iron Casting Company of Mount Joy, Pa., will be the general manager of the new company.

The H. H. Perkins Mfg. Company, Kewanee Ill., advise us that the demand for their Perkins' Boss Huskers has been so great this year that their factory have been run through the winter and all the spring 12 hours a day, employing from 35 to 50 operators. The pins are forged from steel, then polished and nicked, and are adjustable to fit any hand. The leather for strapping and threading is of the best, being soft and tough. The principal demand this year is for the three styles known as E, A and B. These goods were first sold in the winter of 1887-88 and the increasing demand indicates the favor with which they have been received.

#### Miscellaneous.

The Wm. Wharton, Jr., Company of Philadelphia are busily engaged in producing the materials for the cable roads in New York. The first shipments were made early in the summer, and are now a daily occurrence.

The buildings and plant of the Cobb Vulcanite Wire Company, Wilmington, Del., have been sold at sheriff's sale to William Weightman of Philadelphia, the principal creditor, for \$29,000.

The zinc furnaces building at Florence, Pa., are rapidly nearing completion.

The Beloit Brass Works, at Beloit, Wis., have passed into the hands of a new company, who will improve the works and operate them under the style of the Architectural Metal Works.

The Continental Tube Works, at Pittsburgh, now owned by the Oil Well Supply Company, have started up after a shut down of three months for repairs.

The Secretary of State of Illinois has recently licensed the incorporation of the following companies: The Elevated Single-Track Cable Construction Company, Chicago, to engage in the construction of single-track elevated cableways for transportation purposes; capital stock, \$500,000; incorporators, George W. Cole, Pleasant Amick and James E. Harder. The Becker Bolt-Threading Machine Company, Chicago, capital stock, \$100,000; incorporators, James A. Becker, George W. Cole and James E. Harder. The Columbia Motor and Construction Company, Chicago, to manufacture and deal in electric motors, dynamos, &c., and construct electric plants; capital stock, \$50,000; incorporators, Jacob Eul, L. E. Sherman, George Sutherland and G. W. Myers. Hydraulic and Steam Brick Machine Company, at East St. Louis; to make brick machines; capital stock, \$500,000; incorporators, H. M. Thompson, E. J. LeRoy and R. T. Hill. The Hopper Roofing Company, at Peoria; to manufacture roofing materials; capital stock, \$15,000; incorporators, J. N. Hopper, D. G. Weiford and Joseph Martin. The Canda Gas and Fuel Company, Chicago, to manufacture gas, steam and ice; mine and treat crude ores, manufacture ores, smokeless fuel, paints, varnishes, &c.; capital stock, \$5,000,000; incorporators, Thurston Gordon Hall, Patrick Dowling Loftus, Edwin Dancy and Thomas Nathaniel Dancy. Weldless Steel Chain Company, Chicago, to manufacture chain-making machinery and license others to do so, and to manufacture chains and other articles; capital stock, \$100,000; incorporators, Alfred C. Kemper, M. J. Frost and J. N. Hanson. The American Architectural Iron and Brass Works, at Chicago; to do an architectural manufacturing business; capital stock, \$20,000; incorporators, S. F. Merchant, J. R. Pigman, G. W. Baker.

The contract for building the new iron steamer for the New Haven Steamboat Company, New Haven, Conn., has been awarded to the Harlan & Hollingsworth Company of Wilmington, Del. The boat will be 315 feet long, 47 feet beam and 18 feet draft, and will be propelled by twin screws and triple expansion engines. Her cost will be about \$350,000, and she will be ready for use August 1, 1892.

The new works of the Akron Electrical Mfg. Company are nearing completion. This concern will make a fire alarm system, and already have on their books orders from all over the country.

The new plant of the Deadwood and Delaware Smelting Company at Deadwood, S. D., recently completed at a cost of \$300,000, has made an initial run, with good success. The company will operate the pyritic process, distinguished from lead smelting by the fact that iron pyrites instead of lead ores are used for flux.

The Ongley Electric Company's watchman's register with its adjuncts, viz., engine stopping device, fire alarm signals, automatic sprinkler protector, &c., has been adopted by the Pennsylvania Railroad yards both at Jersey City and Hoboken, Eble & Herter's Brewery, Philadelphia, Penn., and the Appleton Mfg. Company of Brooklyn.

The smelter of the Omaha and Grant Smelting Works at Omaha, Neb., has shut down for an indefinite period, and the company may consider favorably inducements offered by other cities to remove the plant from Omaha. A strike recently occurred at the works over the eight-hour day and the men are still out, which hastened the closing of the works.

#### An Eiffel Project for Chicago.

The directors of the World's Columbian Exposition at Chicago have received by cable from M. Eiffel of Paris a statement that he desired to make a proposition for the erection of a tower on the fair grounds, to which they have replied that they would be glad to entertain such a proposition. One of the directors makes the following statement on the subject:

If M. Eiffel is allowed to build a tower for this exposition it will probably be placed somewhere on Midway Plaisance. This is the site contemplated in the various other tower schemes which have been proposed. One was the Proctor tower, which was to be 1150 feet high—150 feet higher than the Eiffel Tower. This enterprise fell through for lack of funds. Then W. E. Hale, the elevator man, thought a tower could be built on a less expensive scale than Proctor's. Architect Morrison is now in Paris making estimates on the cost for Mr. Hale; but it is fair to assume that no competitor can stay long in the field against M. Eiffel.

Admission to the exposition grounds would certainly admit visitors to an exterior view of the tower. But it would be a private enterprise probably, and the owners would expect to reimburse themselves for the great outlay involved in its erection by charging an admission fee to all who ride up the elevators to the top or to any intermediate landing. In favor of the tower an exception would probably be made to the rule that there shall be no extra charge made to persons who have paid the admission fee to the grounds for seeing anything placed on exhibition there.

It is not known that M. Eiffel would not be willing to allow the exposition to own the tower. If he would consent to such an arrangement the success of the Eiffel Tower in Paris as an investment might warrant the Fair Directory in undertaking the expense of erecting the tower here. Long before the Paris Exposition was over the cost of the tower had been received in admissions and handsome dividends had been paid to the stockholders. It is to-day paying handsomely.

A new bridge to be built over the Harlem River at Seventh avenue will cost \$1,250,000, and will have the widest draw in the world. This will be 412 feet long, will weigh 2400 tons and be operated by a 60-horse-power engine.

Facilities in the South for teaching civil and mechanical engineering are no longer lacking. Professor Nicholson of the Louisiana State University, in a published statement, speaks of the Tulane University and the Agricultural and Mechanical College of Alabama as being well equipped with all appliances for a practical course.



# TRADE REPORT.

## Philadelphia.

Office of The Iron Age, 220 South Fourth St.,  
PHILADELPHIA, Pa., August 11, 1891.

**Pig Iron.**—The market shows some little improvement, and while there is no expectation of any material change in values, it is believed that the lowest figures have been reached, and that prices are now on the up grade. This for the time being refers only to a few special brands, although it is a fact that even the lower qualities have a price to them, which could hardly have been said some time ago. There is no urgency in the demand, however, and as a rule bids for large lots are all at from 25¢ to 50¢ below the ordinary asking rates. The improvement, therefore, consists largely in the fact that buyers are ready to take some Iron at some price, and that holders are less inclined to accept low figures than they were a short time ago. How much further this improvement will be carried remains to be seen. It would not require much of a demand to start things again, but as we have already intimated, some confirmatory movement is necessary to produce the right kind of conviction on that point. From all the evidence that we have been able to gather, we are inclined to think that the conditions are favorable for permanent improvement, and that while it may be and doubtless will be of slow development, it will be a development, nevertheless, and two months hence it may have become a very important one. Reasons for this opinion may be given as follows: 1, stocks in consumer's hands are very light; 2, their requirements are increasing; 3, the demand is improving; and, 4, less than current rates would leave a positive and serious loss to many producers. Against this it must be conceded that the output is large and that stocks on furnace banks have probably increased during the past six or eight weeks, but as prices have been fairly maintained during the dullest period of the whole year it is reasonable to assume that they will not suffer to any extent just at the time when there is a prospect of a better market, although it is not unlikely that large lots may be picked up at low figures before there is anything like uniform firmness. The trade are surely taking a deeper interest in the matter than for some time past; the number of bids that are being made prove that conclusively. The outcome is not absolutely certain; of course, it may result in a general movement among buyers, or if they find sellers too anxious to meet the improved demand it may produce another slight reaction, but we again repeat that the feeling at the moment tends a little in the other direction, and the disposition is to be hopeful. Meanwhile sales have been at about last week's figures—viz., for lots delivered:

Ohio Softeners, No. 1x.....	\$19.00 @	.....
Ohio Softeners, No. 2x.....	18.00 @	.....
Standard Penna, No. 1x.....	17.75 @	\$18.00
Standard Penna, No. 2x.....	16.50 @	17.00
Medium Penna, No. 1x.....	17.25 @	17.50
Medium Penna, No. 2x.....	16.00 @	16.25
Virginia, No. 1x.....	16.75 @	17.50
Virginia, No. 2x.....	15.75 @	16.00
Standard Neutral All-Ore Forge	14.50 @	15.00
Ordinary Forge Cinder mixed ..	13.75 @	14.00
Hot-Blast Charcoal.....	20.00 @	22.00
Cold-Blast Charcoal.....	24.00 @	27.00

**Muck Bars**—The market is in a very unsatisfactory condition, neither buyer nor seller being inclined to make concessions, while their ideas of value are about 50¢ to 75¢ apart. Sellers ask all the way from \$26.50 to \$27 at their mills, with buyers at \$26.75 @ \$27, delivered. The hot spell is likely to help holders, if it continues for any length of time, as it must retard the output considerably, al-

though there is some pressure to-day from one or two parties who are offering a few lots for spot cash—in one case as low as \$26, f.o.b. cars at mill.

**Steel Billets.**—The position in this department is very similar to the one mentioned in the preceding paragraph. Buyers are not at all anxious to load up, although prices look temptingly low, say \$27 @ \$27.25 at points on the Susquehanna, or \$27.50 @ \$27.75 for seaboard or Schuylkill Valley deliveries. We are not apprised of any sales, although a bid of \$26.75, Harrisburg, was made for Nail Slabs, against an offer to sell at \$27, but without leading to business, neither side being willing to compromise.

**Bar Iron.**—Market continues dull and devoid of interest. There is a moderately good general demand, but large orders are not forthcoming in a way to cause much activity. Mills are fairly employed, however, and as the output is small, on account of the extreme heat, the current demand is about equal to the supply. Prices are irregular, nominally 1.75¢ @ 1.80¢ for city deliveries of Best Refined Iron and 1.65¢ @ 1.70¢ at interior points, but on good-sized lots these figures can be shaded, according to circumstances.

**Skelp Iron.**—The demand is extremely small, 1.70¢ @ 1.75¢, being nominal for Grooved Skelp, delivered, but there is no demand of any account.

**Plates.**—The market remains in a fairly satisfactory condition, the demand being about equal to the current output. Some good-sized lots have been taken, but the 2500-ton order for Plates for the new cruiser was placed by Jas. G. Lindsay & Co. with the Carbon Iron Company of Pittsburgh, the shap:s going to the Phoenix of Phoenixville. The Reading Terminal order is expected to be placed with some of the mills on the Schuylkill, but no definite announcement can be made at present. Apart from these the amounts called for are not important, so that prices remain as for some time past, feverish and irregular, at the following figures asked:

	Iron.	Steel.
Tank Plates.....	1.95 @ 2.05¢	2.05 @ 2.10¢
Refined.....	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

**Structural Material.**—The demand is about equal to the capacity for early deliveries, but there is nothing heavy for later dates, so that the mills are not adding very much to the amount of business actually on their books. Prospects are improving, however, and the feeling is hopeful in regard to the ultimate outcome during the later months of the year. Prices remain as follows, with some degree of firmness in Shapes: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

**Sheet Iron.**—The demand for thin Sheets does not improve, and manufacturers are somewhat restive under the delay in placing orders which must come on the market sooner or later. Heavy Sheets are in the usual good demand, and sales of these are about equal to the supply, but the general report is not buoyant. Prices remain as last quoted, viz. for best makes:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @ 3.20¢
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @ 3.50¢
Best Refined, No. 28.....	3.50¢ @ 3.60¢
Common, ½¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24.....	3¼¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26.....	3½¢ @ 3¾¢
Best Soft Steel, Nos. 27 to 28.....	3¾¢ @ 4¢
Best Bloom Sheets, ½¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	@ 67½¢
Common, discount.....	@ 70¢

**Old Rails.**—Market dull and unchanged. Iron Rails nominal at \$21.50 @ \$22.50 and Steel \$17.50 @ \$18, price according to point of delivery.

**Scrap Iron.**—Demand irregular and spasmodic, and to some extent the same may be said in regard to prices. Choice lots command full prices, others vary according to circumstances. The following quotations are fairly representative of the market, say: No. 1 Railroad Scrap, \$20.50 @ \$21.50, Philadelphia, or for deliveries at mills in the interior \$20.50 @ \$21.50, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$24 @ \$25 for Old Fish Plates, and \$16 @ \$17, delivered, for Old Car Wheels.

**Wrought Iron Pipe**—Demand good for small sizes, and discounts nominally 2½ % less than quoted a week ago, although it is not expected that the list will be strictly adhered to.

Butt-Welded Black.....	52½ %
Butt-Welded Galvanized .....	42½ %
Lap-Welded Black.....	60 %
Lap-Welded Galvanized.....	50 %
Boiler Tubes, 2¼ inch and under.....	52½ %
Boiler Tubes, 2½ inch and larger.....	57½ %

## Chicago.

(By Telegraph.)

Office of The Iron Age, 50 Dearborn street,  
CHICAGO, August 12, 1891.

The unsatisfactory condition of the Iron trade has been sharply emphasized during the past week by two failures here—one in the rolling-mill business and the other a foundryman. Such occurrences are, of course, not conducive to an improved feeling, but, on the contrary, impair confidence. It had been expected that by this time the state of trade would be so much better that manufacturers would find balances on the right side of their ledger again, but the promised good times are delayed.

**Pig Iron.**—Coke Iron, both local and Southern, is in fair demand, but without special feature. No large contracts have been placed recently, but consumers are obliged to buy frequently to keep themselves supplied. Spiegel continues to sell at \$28 for 20 %, \$38 for 30 % and \$46 for 80 %. Ohio Softeners are moving quite freely, and furnace agents find that foundrymen who have not used them for a long time are returning to them for some reason. Lake Superior Charcoal is picking up again. One sale of 1000 tons is reported, besides several 100 to 200 ton lots, and further inquiries have come forward from Car Wheel and malleable concerns. Quotations are unchanged, as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.00 @ \$17.50
Local Coke Foundry, No. 1.....	15.50 @ 15.50
Local Coke Foundry, No. 2.....	15.00 @ 15.25
Local Coke Foundry, No. 3.....	14.50 @ 15.00
Local Scotch.....	15.50 @ 15.50
Ohio Strong Softeners.....	17.75 @ 18.25
Southern Coke, No. 1.....	15.75 @ 16.25
Southern Coke, No. 2.....	15.00 @ 15.25
Southern Coke, No. 3.....	14.50 @ 15.00
Southern, No. 1, Soft.....	15.00 @ 15.75
Southern, No. 2, Soft.....	14.25 @ 14.75
Southern Gray Forge.....	14.00 @ 14.00
Tennessee Mottled.....	13.50 @ 14.00
Tennessee Charcoal, No. 1.....	18.00 @ 18.00
Alabama Car Wheel.....	21.50 @ 22.50
Coke Bessemer.....	@ 20.00
Hocking Valley, No. 1.....	17.00 @ 18.50

**Bar Iron.**—The failure of the National Forge and Iron Company is the event of the week; they have contracts yet to fill, and the works will probably be kept going until they are completed. It is expected that in the meantime an arrangement will be made with the creditors by which they can resume. Not much new business is reported. The very hot weather of a greater part of the week may have had something to do with this. Inquiries are

known to be in the market which have not been closed. The Mahoning Valley manufacturers are decidedly bullish, and are working up to 1.60¢ at mill, half extras. They think this will soon be the ruling rate, as their order books are now well filled. Local iron is held at 1.65¢ @ 1.75¢, with very few sellers at the inside figure.

**Structural Iron.**—At least two important buildings have been let to local contractors. Both will be of mixed Cast Iron and Steel construction; others are getting in shape for bids. The building projects are now becoming visible for next year and plenty of work seems to be assured. Prices are about as before, except Angles, which fluctuate from time to time according to the condition of the mills, so that a price to day is no basis for business to-morrow.

**Plates.**—A good average business is reported. The volume of trade keeps up, and even some railroad buying is being done, orders from that source being always urgent. Prices from Mill are firmer for Tank Iron or Steel. On a very desirable order the manufacturers have refused to shade 2.05¢, Chicago, while they named 2.15¢ @ 2.20¢. Boiler tubes have been advanced to 60% off, 3 to 6 inch. Belated buyers are making inquiries but find prices stiffening. Manufacturers now ask 2.80¢, at mill for No. 27 and few will sell at that rate. Jobbers report a good trade from merchants and consumers at 3.20¢ for No. 27 Common.

**Galvanized Iron.**—Business has been quite active of late, especially in orders from stock. Warehouses are reducing their accumulations rapidly. Inquiries from distant points are improving, and considerable has been done by Missouri River merchants. Juniata is selling from stock at 67½% off.

**Merchant Steel.**—Local houses report a very satisfactory trade in progress in Steel of all grades. The railroads are buying from hand to mouth yet, but their orders are more frequent. Carload lots unchanged.

**Track Supplies.**—Steel Rails are in regular demand in a moderate way, but a great deal of business is in sight, and active times seem not far distant. Manufacturers quote \$31.50 @ \$32.50, according to size of order and time of delivery. Splice Bars are quoted at 1.85¢ @ 1.90¢. Spikes 2.20¢ @ 2.25¢. Track Bolts with Hexagon Nuts have been sold at 2.70¢, Chicago.

**Old Rails and Wheels.**—Old Iron Rails are moderately active. A good sized sale is reported at \$23.25 at an interior point, and considerable business has been done near-by at \$23.25. They are not in large supply, but, on the other hand, consumers are not urgently in need of them. Old Steel are worth \$14 @ \$16, according to length. Old Car Wheels are very quiet and nominally quoted at \$15.50, as holders are not ready to sell at \$15 in any quantity.

**Scrap.**—The local Scrap market will be affected if the National Forge should be closed for a time, as it was a large consumer. At present prices are a little firmer than they have been. Scrap is scarce, and even Steel Scrap is looking up. We quote as follows, per ton of 2000 pounds: No. 1 Railroad, \$19.50 @ \$20; No. 1 Forge, \$19; No. 1 Mill, \$15; Fish Plates, \$21.50; Axles, \$24; Pipes and Flues, \$13; Horseshoes, \$18.50 @ \$19; Cast Borings, \$8; Wrought Turnings, \$11.50; Axle Turnings, \$14; Machinery Cast, \$13; Stove Plates, \$10; Mixed Steel, \$12; Coil Steel, \$14.50; Leaf, \$16; Tires, \$16.50.

**Metals.**—Lake Copper, 12½¢ (quoted in error last week 20¢) for carloads; casting brands, 12¢ @ 12½¢; prime Western

Spelter, 4.95¢. Messrs. Everett & Post report that the history of the Lead market for the past week has been that of a steady advance, brought about by an increased demand, in which the present labor troubles in the Lead world have been a potent factor, and should these continue there will undoubtedly be a further marking up of prices. Outside of this there has been a better inquiry, especially for September delivery, and considerable Lead has changed hands, but the demand is not satisfied, and from present appearances there will not be Lead enough to go around by the time next month arrives. In Chicago some 700 or 800 tons have changed hands at prices ranging from 4.27½¢ to 4.40¢, according to brand and delivery. The market closed strong at 4.40¢ asked.

## Louisville.

LOUISVILLE, KY., August 10, 1891.

**Pig Iron.**—The market continues very dull, and there is no trading of any consequence. The general impression is that there will be considerable activity in all branches of the Iron business during the fall and winter, though at the moment few consumers of Pig seem inclined to take advantage of the prevailing low prices to protect themselves on contracts anticipated a month or so hence, and the consequence is a general "hand-to-mouth" business, buyers taking only what Pig Metal they are obliged to have for contracts already in hand. There is really no change in quotations, which are nominally on a basis of \$10 @ \$10.25 for Gray Forge, Birmingham, though offers on a less basis for some lots are reported. We quote for cash, f.o.b. cars, Louisville:

Southern Coke, No. 1 Foundry...	\$14.50 @	\$15.00
Southern Coke, No. 2 Foundry...	13.75 @	14.25
Southern Coke, No. 3 Foundry...	13.25 @	13.75
Southern Coke, Gray Forge.....	12.75 @	13.25
Southern Charcoal, No. 1 Foundry	16.00 @	17.00
Southern Car Wheel, St'nd br'nds	19.00 @	20.00

## Cleveland.

CLEVELAND, August 10, 1891.

**Iron Ore.**—Lake freights are advancing one day and declining the next in a very peculiar and irregular manner. One day last week the Escanaba rate crept up to \$1.10 and the Ashland rate to \$1.25. These freights continued but for a day or two and then declined again to 95¢ from Escanaba and \$1.10 from Ashland and Two Harbors. To-day the Escanaba rate is \$1, while \$1.15 is asked for bringing a ton of Coal from Ashland, Marquette or Two Harbors. The Escanaba rate is, therefore, 45¢ per ton higher than at the opening of navigation. It is not strange in view of this that the market itself should be exceedingly quiet. Buyers are scarcely in the mood to pay 50¢ per ton advance for Ore, and mine owners do not care to make further contracts at present prices with the probability of having to pay even higher freights. Quotations, as a matter of fact, are really about 25¢ per ton higher than in May and June, when the great bulk of this season's output was sold. During the past ten days 55,000 tons of Ore were sent forward to the furnaces, against 40,000 tons for the same period last year. We hear of a sale of non-Bessemer at \$8.75, f.o.b. vessels Ashtabula. The market is certainly firmer, despite its almost complete inactivity.

**Pig Iron.**—The market is still very quiet but prices are firm. Indeed, they could be nothing else in view of the condition of affairs in the Ore market. Dealers do not look for much activity until after the middle of the month. No sales of consequence are reported, although there is something of a demand for Mill Irons. There is a stronger feeling of confidence in the steady improvement in the market

from this time forward than for several weeks past. Bessemer Irons are regaining firmness, and there seems likely to be no further concessions in prices in order to force sales. Local quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	\$18.50 @	\$19.00
Nos. 1, 2 and 3 Bessemer, per ton..	16.25 @	16.50
No. 1 Strong Foundry, per ton..	16.25 @	16.75
No. 2 Strong Foundry, per ton..	15.25 @	15.75
No. 1 American Scotch, per ton..	16.80 @	17.00
No. 2 American Scotch, per ton..	15.80 @	16.85
No. 1 Soft Silvery, per ton.....	16.50 @	17.50
Mahoning and Shenango Valley		
Neutral Mill Irons, per ton....	14.50 @	15.03
Mahoning and Shenango Valley		
Red Short Mills, per ton.....	15.00 @	15.50

**Old Rails.**—There is a fairly good demand for old American at \$22.50, but only a few sales are reported.

**Scrap.**—The market shows a little more activity, and some sales are reported on the basis of \$19.25 for No. 1 Railroad Wrought and \$14.25 @ \$14.50 for Cast Scrap.

## Pittsburgh.

Office of The Iron Age, Hamilton Building.  
PITTSBURGH, August 11, 1891.

The dullness characteristic of the mid-summer season still obtains, but there is every indication that an improvement is near at hand. Crop reports are generally of a more favorable character, and railroads are nearly all busy moving the crops. There is an increasing demand for Finished Iron and Steel of nearly all kinds.

**Pig Iron.**—There is no improvement to note in demand, but it is expected that there will be soon, as stocks in hands of consumers are light and will soon have to be replenished, as consumption is increasing. Lake Ore freights have almost doubled within the past few weeks, and what effect this is going to have on Pig Iron remains to be seen. As yet the consumer has the advantage in regard to price, as the sales reported the past week show a slight decline in some instances, and there does not appear to be any improvement in the demand. However, as already stated, consumers generally are low in stock, and with an increasing demand for Finished Material will soon have to replenish their supply of the raw article. It is the opinion of well informed operators that consumers do not assume much risk in making contracts for Pig at present prices, and it may be noted that some furnacemen are even now indifferent about making additional contracts at ruling rates. We quote prices as follows:

Neutral Gray Forge.....	\$13.75 @	\$14.00 cast.
White and Mottled.....	13.00 @	13.50 "
All-Ore Mill Iron.....	14.50 @	14.75 "
No. 1 Foundry.....	16.50 @	16.75 "
No. 2 Foundry.....	15.25 @	15.50 "
No. 3 Foundry.....	14.75 @	15.00 "
No. 2 Charcoal Foundry.....	21.00 @	22.00 "
Cold-Blast Charcoal.....	25.00 @	27.00 "
Bessemer Iron.....	15.90 @	16.00 "

There was one sale of Bessemer Iron reported at \$15.90, cash. With this exception there have been no sales reported below \$16, at which most of the business has been done during the past couple of weeks.

**Muck Bar.**—The demand continues light, while prices remain unchanged, ranging from \$26.50 to \$27, most of the business being at \$26.65 @ \$26.75.

**Ferromanganese.**—There is a fair demand, mostly for small lots for immediate or near-by deliveries. Sales of domestic 80% at \$66.50, cash.

**Manufactured Iron.**—There is an increasing demand for all kinds of Merchant Iron, and the mills generally are now well employed. Some of them have more than they can do. A number of large orders have been placed recently from manufacturers of agricultural implements, and railroad orders are coming forward freely. The improved demand has steadied up prices, though we make no change in our



quotations. Bars, 1.70¢ @ 1.75¢; Tank and Plate, 2.10¢ @ 2.15¢; No. 24 Sheet, 2.75¢ @ 2.80¢, all 60 days, 2 % off for cash. Skelp Iron is quotable at 1.62½¢ @ 1.65½¢ for Grooved, and 1.87½¢ @ 1.90¢ for Sheared, four months, 2 % off for cash.

**Nails.**—There is nothing new to note in connection with the Cut Nail trade; business continues light and prices unsatisfactory to makers. We continue to quote 35 average at \$1.55 @ \$1.60, f.o.b. at factory, 60 days, 2 % off for cash. Some good sized orders have been placed within the week for Wire Nails at \$1.90, 60 days, 2 % off for cash, f.o.b. at factory. Statistics show that while production of Cut Nails is falling off, that of Wire Nails is increasing.

**Wrought-Iron Pipe.**—At the last meeting of the Manufacturers' Association, which took place in Philadelphia last Thursday, prices were slightly advanced, and are now as follows: Discounts on Butt, Black, 52½ %; do., Galvanized, 42½ %; on Lap, Black, 62½ %; do., Galvanized, 50 %; Boiler Tubes, up to 2½-inch, 55 %; 3 to 6 inch inclusive, 60 %; 7-inch and larger, 55 %; Casing, all sizes, 55 %. While trade is picking up somewhat, it is considerably short of what it was at this time last year, and but few of the mills are running up to their full capacity.

**Old Rails.**—There has been considerable inquiry developed for Old Iron Rails within the past week or two, with but few offering; may be quoted at \$23 @ \$23.50. The stock is becoming more and more reduced every year, and as none are being made they will soon be a thing of the past. Old Steel Rails are less active, but prices remain about as last quoted—\$17.50 @ \$18.

**Structural Material.**—There is a very fair and increasing business, but it is not what it should be at this season of the year. Prices remain unchanged: Beams and Channels, 3.10¢; Sheared Bridge Plates, 2.10¢ @ 2.15¢; Angles, 2¢; Tees, 2.60¢; Universal Mill Plates, Iron, 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

**Steel Plates.**—There has been but little new business placed here recently, excepting in a small way. Business is very poor for the season. No change in prices. Fire Box, 3.90¢ @ 4.25¢; Tank, 2.10¢; Shell, 2.35¢; Flange, 2.55¢.

**Merchant Steel.**—There is a moderate business at unchanged prices. Crucible Tool Steel, 6½¢ @ 7¢; do., Spring, 4¢; do., Machinery, 4½¢ @ 5¢; Bessemer Spring Steel, 2.50¢; do., Machinery, 2.40¢ @ 2.50¢; Toe Calk, 2½¢; Tire, 2.20¢; Steel Bars, 1.80¢ @ 1.85¢ rates, full extras.

**Barb Wire.**—Painted is quoted at \$2 75, and Galvanized at \$3.25, f.o.b. at factory. The above are the prices made by the Pittsburgh agency of the Columbia Patent Company, and as the Columbia now contains within its membership about all the manufacturers in the country, it is to be supposed that these prices will be maintained. Each agency, of which there are to be ten in the whole country, will have its own prices, which will be made or confirmed by the Columbia Company at Chicago.

**Wire Rods.**—There has been no new business reported for several weeks, in the absence of which we quote nominally at \$36 @ \$36.50, cash, f.o.b. at makers' mill. The fact of the matter is manufacturers are pretty well sold ahead and consumers have covered their wants for some time to come.

**Billets and Slabs.**—There is a fair business, but the market is weak, and most of the business the past week has been at a slight decline. We now quote Billets at \$25.25 @ \$25.50, cash, at

makers' mill, with sales of some 5000 tons in different lots reported within the range of prices quoted.

**Steel Rails.**—Business is only fair, but is liable to improve as the season becomes more advanced. Price firm at \$30, f.o.b. at makers' mill.

**Railway Track Supplies.**—There is a continued good demand, and those mills making a specialty of the same have about all they can do. Railroads were late commencing to buy this year, hence an active trade is looked for until the close of the year. No change in prices. Spikes, 2.15¢, 30 days, f.o.b. at makers' mill; Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2.75¢ @ 2.85¢ with Square and Hexagon Nuts.

**Old Material.**—There is a fair business at unchanged prices. No. 1 Railroad Wrought, \$19 @ \$19.50, net ton; No. 1 Wrought Turnings, \$13.50; Old Iron Car Axles, \$25 @ \$26; Cast Scrap, \$13.75 @ \$14, gross; Car Wheels, \$16 @ \$16.50; Sales of Steel Bloom Ends at \$17.50, gross ton.

**Connellsville Coke.**—There is a steady demand, with prices unchanged, as follows: Furnace Coke, \$1.90; Foundry Coke, \$2.30; Crushed, \$2.65, all per net ton, delivered f.o.b. at ovens.

## Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fourth and Main Sts., }  
CINCINNATI, August 13, 1891. }

**Pig Iron.**—There has been the usual volume of current consumptive orders during the week, which have been executed at previous current prices, but whenever buyers were able to take round lots they did not have to look far for sellers who were willing to make concessions. There was a sale of 3000 tons of Gray Forge for prompt shipment and for spot cash at \$9.50, at the furnace. There were sales of some other kinds of Iron running eight months, the particulars of which were not made public; but it is well known that concessions were granted by the sellers. There were offerings of Tennessee Charcoal, No. 2, as low as \$13.50, delivered here, but this was Iron with a large percentage of phosphorus, and not the regular Foundry Iron. We make no change in quotations, although it might be justified on some grades; but the general tone of the market is weak, and in view of the large production it would seem to be for the better interest of the whole trade for Pig Iron to get down to the lowest point as quick as possible, for that would either stimulate consumption to a point that would clean the market up or stop production, and in either event bring values to a paying basis. Car repair shops give some indications of increased work, but not to an extent that would be appreciated in the Iron trade. The fact is, the railroad companies cannot command the money to prosecute needed work, and their resumption of repairs must be gradual. Collections are more generally satisfactory, and there are favorable indications of a betterment in the near future, but notes are more accessible than actual cash now. There is no essential derangement in prompt deliveries on old contracts. Last week's quotations rule, as follows:

### Foundry.

Southern Coke, No. 1.....	\$14.75 @	\$15.00
Southern Coke, No. 2.....	13.50 @	13.75
Southern Coke, No. 3.....	14.00 @	13.25
Ohio Soft Stone Coal, No. 1.....	16.50 @	17.00
Ohio Soft Stone Coal, No. 2.....	15.50 @	16.50
Mahoning and Shenango Valley.....	17.00 @	17.50
Hanging Rock Charcoal, No. 1.....	20.00 @	21.00
Hanging Rock Charcoal, No. 2.....	19.00 @	20.00
Tennessee and Alabama Charcoal, No. 1.....	16.00 @	17.00
Tennessee and Alabama Charcoal, No. 2.....	15.00 @	16.00

### Forge.

Gray Forge.....	12.50 @	12.75
Mottled Neutral Coke.....	12.00 @	12.25
Car Wheel and Malleable Irons.		
Standard Southern Car Wheel.....	19.25 @	19.75
Hanging Rock, Cold Blast.....	25.00 @	26.00
Lake Superior Car Wheel and Malleable.....	18.00 @	18.50

## St. Louis.

Office of The Iron Age, 214 N. Sixth st., }  
St. Louis, August 10, 1891. }

**Pig Iron.**—The same old story of extreme dullness has again to be repeated as the condition of this market for the past week. There is absolutely no observable change in the general condition of trade. Inquiries were somewhat more numerous last week, but for some reason or other they failed to develop into any business. Sales have been few, and were generally for small lots for immediate delivery. Furnaces have been talking for the past six months about the improvement which was to take place in the near future, but the near future seems not to have arrived as yet, and is apparently as far distant as it was six months ago. Prices continue without change. Some furnaces, however, who are anxious to dispose of their Iron are offering to sell at from 25¢ to 35¢ per ton less than the prices as quoted below. Consumers report a steady trade, and a careful examination of their stocks indicates that they will shortly need replenishing. Even consumers will admit that prices are extremely low, and it seems a very favorable moment to purchase for future wants. There are a number of odd lots on the market at the moment that can be bought at inside figures, and to a disinterested party it would seem like good policy to take advantage of these offers. Consumers, however, refuse to be cajoled into buying beyond their immediate needs, and the market remains in a listless, uninteresting condition. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.....	\$15.50 @	\$15.75
Southern Coke, No. 2 Foundry.....	14.50 @	14.75
Southern Coke, No. 3 Foundry.....	13.75 @	14.00
Gray Forge.....	13.00 @	13.25
Southern Charcoal, No. 1 Foundry.....	17.00 @	17.50
Southern Charcoal, No. 2 Foundry.....	16.50 @	16.75
Missouri Charcoal, No. 1 Foundry.....	15.50 @	16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @	15.50
Ohio Softeners.....	17.50 @	18.75

**Bar Iron.**—The demand can be called somewhat better, although it is not by any means satisfactory to the mills. Prices do not show any changes either way. Lots from mill are quoted at 1.70¢ @ 1.75¢, delivered on cars at East St. Louis. Lots from store command 1.82½¢ @ 1.87½¢, according to quantity.

**Barb Wire.**—As stated in this report several times, this industry is now practically controlled by the Columbia Patent Company, which company are selling on the basis of 2.85¢ for carload lots of Painted, and Galvanized in like quantities at 3.35¢. Less than car lots 5¢ additional. Terms, 30 days or 2 % discount for cash within ten days from date of invoice.

**Wire Nails.**—An increasing demand is noted. Jobbers have been buying quite freely, and country dealers are also ordering quite freely. Carload orders are booked on the basis of \$2.15; small lots from store at \$2.25.

(By Telegraph.)

The situation in Pig Lead has undergone some change during the past week. The labor troubles in the Omaha and Granite Smelting and Refining Company's Works, at Omaha, created some excitement in this market. This concern manufacture about 3500 tons monthly, and as

the employees deserted their furnaces all filled with the fires burning, it will be fully two months before they are under way again, as it will take all of this time to relieve the furnaces. There are buyers to-day on the basis of 4.35¢ for prompt shipment, and with the curtailment of production and a steady demand, higher prices seem more than probable. In Spelter there is absolutely no change. There is a lack of interest in the market, and sales are few and of little consequence. For September delivery 4.80¢ is quoted.

## Detroit.

**WILLIAM F. JARVIS & Co.,** Detroit, Mich., under date August 10, say: Mid-summer dullness, added to the fact that the reunion of the Grand Army was held in Detroit last week, absolutely prevented anything in the way of business here, locally, and were it not for the demand which came from the East for our Lake Superior Charcoal Iron, there would have been a positive dearth of transactions. It is pleasing to note that this demand for Lake Superior Charcoal seems to keep up without cessation, and it shows but slight accumulation of stocks at the various furnaces in this region. Otherwise the market was dull. We repeat quotations of last week:

Lake Superior Charcoal, all numbers.....	\$18.00 @ \$18.50
Lake Superior Coke, Bessemer.....	17.75 @ 18.25
Ohio Blackband (40 per cent.).....	18.00 @ 18.50
Lake Superior Coke Foundry, all ore.....	17.50 @ 18.00
Southern No. 1.....	16.25 @ 16.50
Southern Gray Forge.....	14.00 @ 14.50
Jackson County (Ohio) Silvery.....	18.00 @ 18.50

## New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, August 12, 1891.

**American Pig.**—The market remains very quiet, but displays occasional soft spots; thus No. 2 Foundry has been offered at \$15, delivered, the inducement being sharp cash payment. Southern Iron is still selling on the basis of \$9.75 for Gray Forge, under which thus far no sales are reported. We print elsewhere our usual monthly blast furnace statistics, which indicate a heavy production. Northern brands are quoted at \$16.75 @ \$18 for No. 1; \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Irons sell at \$16 @ \$17 for No. 1; \$15.25 @ \$16 for No. 2; \$15.50 @ \$16 for No. 1 Soft, and \$14 @ \$14.50 for Gray Forge.

**Spiegeleisen and Ferromanganese.**—The market is lifeless, and the prices made in the West by domestic makers are such that there is no chance for foreign material any considerable distance inland. We continue to quote Spiegeleisen \$27.50 @ \$28 and Ferromanganese \$63.50 @ \$64.

**Billets and Rods.**—The market is very quiet both East and West. The only transaction of magnitude reported was the placing of 2000 tons of 3-inch Billets at an equivalent of \$28, Pittsburgh mill. Wire Rods are quiet and steady at \$38 @ \$38.50, at tidewater. The foreign market was reported to be 120/, f.o.b. Antwerp.

**Steel Rails.**—The lifeless condition of the Rail trade still continues, not a single transaction of magnitude being reported by the representatives of Eastern mills in this market, while agents of Western mills have as little business to record. The report of the Board of Control for August 1 shows aggregate sales of 860,755 gross tons, standard sections, while the shipments to that date were 584,938 tons. This compares as follows with July 1:

Sales, 808,910, an increase of 52,000 tons; shipments, 454,423 tons, an increase of 130,000 tons. It is evident, therefore, that the mills are rapidly catching up with work booked. During the last two months the Western mills have been running relatively full. Quotations remain unchanged at \$30.75 @ \$31, at tidewater.

**Rail Fastenings.**—Quotations remain unchanged, as follows, the market being entirely nominal: Spikes, 2.15¢ @ 2.25¢, delivered; Bolts and Nuts, 2.70¢ @ 2.80¢, and Fish Plates, 1.75¢ @ 1.80¢.

**Manufactured Iron and Steel.**—The reports that the Plates for two ships had been placed proves correct, a leading Pittsburgh mill taking the Pacific Coast order and a mill on the Delaware River the Roach business. A Pittsburgh mill has also secured the Plates for the last cruiser. In Bars a New York trunk line has placed a round order, and a lot of several thousand tons of Hoops has been taken by a two are practically placed. We quote: Angles, 1.95¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank; 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Links and Pins have sold lately at a shade under 2¢, delivered.

## Financial.

Estimates of the total yield of the wheat crop have been advanced, and this fact is among the most noteworthy of the week. The Ohio State Board makes the condition in that State 97 %, and dispatches from the Northwest estimate the crop of Dakota and Minnesota at 130,000,000, against 79,000,000 a year ago. The Cincinnati *Price Current* also raised the estimate to 585,000,000 for the total of the crop, against 540,000,000 indicated by the last Government report. The wheat crop of Kansas, which the President of the Alliance put down at 42,000,000 bushels, is now estimated at 70,000,000. Added to these accounts the report of the Washington Agricultural Bureau shows a gain of 1½ % in spring wheat condition, or 95.5. Winter wheat not given. Corn shows 2 % loss, or 90.6 %; but this loss is generally estimated in the trade to have been more than recovered since August 1, when the report was made up. Oats showed a gain of 2 %, or 89.6 %. Altogether the report was regarded as more favorable than expected. Nevertheless, prices are stronger. The clearances from New York last week were 1,768,187 bushels of wheat, besides 55,368 barrels and sacks of flour. In two weeks New York has cleared 2,500,000 bushels without counting flour. The ocean steamships are already accepting contracts for grain transportation during the autumn months sufficient to give assurance of a remarkable export business in breadstuffs. The report is not confirmed that the Russian Imperial Council would prohibit the exportation of corn from that country, but exports will be restricted. The London *News*, commenting on Beer bohm's statistics of future requirements, says: "It is clear that without America's help Europe would be on the verge of starvation before the next harvest." American merchants of all classes are not indifferent to a situation so favorable.

On the Stock Exchange there was a report that the Union Pacific would be placed in the hands of a receiver unless that portion of the floating debt which is being carried on call loans could be arranged for on a time loan to run for a period sufficiently long to enable the company to reduce materially the debt. A subsequent report that a syndicate had been formed to provide the needed funds was not confirmed. There appeared to be some

selling of Union Pacific by the arbitrage houses for European account, and a fair amount of support to Lackawanna and to the other coal shares, on the action taken by the Reading and Lehigh Valley in shutting down their collieries in order to restrict production. On Saturday there was an attack upon Richmond Terminal, based upon a statement of alleged deficiencies in the operations of roads in the Richmond and Danville system, but the effect on the securities was small. On Monday a statement by cable that there was no cause for apprehension of trouble in London, and that only one house was seriously embarrassed, served to encourage the bullish feeling in nearly all the stocks dealt in at that center, Union Pacific excepted. Another feature was a fall in National Cordage, but in the final dealings the market grew firmer, and it so closed. The feature on Tuesday was a break in Union Pacific to the lowest figures yet recorded, which unsettled the whole list, and the market closed weak.

The merchandise markets at the close of the week show a radical advance in wheat, at least 3¢ a bushel, but for breadstuffs the old prices were still accepted. Cotton on Tuesday was further depressed, but subsequently rallied. India rubber was stronger, on the wants of manufacturers. Petroleum was irregular. Provisions were well sustained on good demand. Raw sugar is firm.

Exports of merchandise from this port for the week, \$7,351,000; imports, \$9,-835,000.

United States bonds were quoted as follows:

U. S. 4½s, 1891, registered.....	100¼
U. S. 4½s, 1891, coupon.....	100¼
U. S. 4s, 1897, registered.....	116¾
U. S. 4s, 1897, coupon.....	116¾
U. S. currency 6s.....	110

Money is easy for short loans on good security, but distrust and uneasiness are the distinctive features, and this in face of many conditions promising unusual prosperity, such as bountiful harvests, cheap food and increasing railroad earnings, so that "there was never an occasion like the present." The effects are seen in the rigid scrutiny of all forms of security in making loans, and in consequence the best business firms are liable to embarrassment, transactions in commercial paper being confined to very narrow limits. Another consequence is seen in the accumulating reserves of many institutions.

Two causes of uncertainty are frequently referred to; first, the possibility of a monetary disturbance resulting from the excessive coinage of silver; but of this it is conceded there can be no real danger for many months to come, whatever Congress may do. The more immediate question relates to the return of about \$70,000,000 in gold which has gone to Europe since the beginning of the year. Careful inquiry serves to show that the favorable balance of our foreign trade sure to result from contracting imports and enormous exports of grain will in the end rectify the disagreeable features of the present situation. To be sure, the lessened value of cotton exports will go far to offset the gain in wheat, but beyond this is the important fact that dear wheat brings corn into demand as a cheap food product invaluable for its nutritive properties. It is therefore not improbable that the United States will easily find a market for the entire surplus of corn, now promising a yield perhaps beyond precedent. Thus in the regular order of events the needed equilibrium is restored to those who wait.

New York City savings banks show the effect of inducements to depositors held out by building and loan associations. During the last six months, as shown by the State Bank Superintendent, the amount withdrawn was \$2,865,000 greater than that placed on deposit.



The reserve of the New York Associated Banks decreased \$1,000,000 last week, while loans were expanded nearly \$1,500,000.

The first bale of new cotton from Texas sold in New York 6th inst. at 10½¢, strictly good middling.

The clearings of 60 cities last week showed a decrease of 10.6%. Outside of New York the increase was 0.01. New York decreased 18, Philadelphia 7.3, Chicago 34.5, Cincinnati 4.7, Pittsburgh 16.1.

The foreign trade returns of this port for the month of July show a heavy falling off in the aggregate movement of merchandise compared with July, 1890. The total imports and exports last month were \$72,344,540, against \$79,381,916 July last year, a decrease of \$7,037,376; but the difference is mainly due to the abnormal imports of a year ago under the stimulus of the impending tariff. The total volume of imports for July, 1890, was nearly \$53,000,000, upward of \$6,000,000 in excess of any former total for the same month. For the corresponding month of this year the total is but a little over \$42,000,000. Exports for the month, exclusive of specie, amounted to \$38,731,000, a gain of about \$3,000,000. Specie exports were about \$7,500,000, against \$14,000,000 for the same time last year. Since January 1 the exports of specie and bullion amount to \$83,037,256. The trade balance in favor of this country for the year ending June 30 was \$112,000,000.

## Metal Market.

**Pig Tin**—All that was said last week regarding the probable near future arrivals is confirmed by later statistics. In point of fact, it is figured out that there are now in transit for this market not less than 1600 tons, and there is no modification of the estimate of the quantity on the way for London. Prices advanced in the London market, apparently under the direction of the leading manipulators there, but the movement of values in the local market has been steadily in the opposite direction, with a decline of about ½¢ lb to record for the week, although speculative action has been comparatively tame. Sellers' option this month, with right to double, sold at 20.10¢, but the identical trade was subsequently covered at 20.90¢, and first half of September delivery went at 20½¢, sellers' right to quadruple, October delivery selling at the same time at 20.15¢ regular. At the same time that those transactions were made 20¢ regular was bid for spot, August, September and October delivery. The trade and consumptive demand has been of about the usual midsummer season average, but extremely conservative. Wednesday's market was rather weak, with sale noted of 10 tons at 19.90¢ regular for August delivery, and jobbing parcels quoted at 20½¢ @ 20¼¢, ex-store.

**Copper**—Lake Superior Ingot has been sold at 11.95¢, and rumor has it that even lower prices have been made by some of the smaller producers. The announcement of those transactions brought out a certain support from influential quarters, however, and it is now made to appear that 12¢ is a strictly inside rate. At the latter price several hundred thousand pounds, according to current report, have changed hands; and it is claimed also that a moderate quantity was placed for future shipment at or about 12½¢, delivered. Between secrecy observed by principals and the rather peculiar plans adopted by some influential operators, actual market value is shrouded in mystery and the maneuvers would lead to the belief that special efforts are making to prevent a decline or to cause it to come slowly. Small parcels of Casting

Copper have been placed at 11¼¢ for September delivery, but there is no demand for round lots and the offering is reserved. The ship M. P. Grace, from San Francisco, July 31, had 2732 sacks of Matte for New York.

**Pig Lead**—Labor troubles at the Omaha Smelting Works instigated freer buying for both speculative and consumptive account. Over 1000 tons changed hands here and a larger quantity in the West, under which prices were carried up to 4.55¢. In fact, one or more single carloads went at 4.57½¢. The rise brought out willing sellers, however, and the freer offering, in turn, had the effect of weakening prices to 4½¢, despite assurances that supplies are moderate and well under control. Sales here, in Boston and Philadelphia amount to about 1200 tons.

**Spelter**—Business in this metal has been of moderate volume, and no improvement in the demand from consumers is noticeable. Smelters, as a rule, offer somewhat reservedly, but the amount of stock on sale is larger now than it was a month ago. While 5.10¢ seems to be the popular quotation, 5.05¢ is doubtless nearer the mark for prime Western, and 5¢ would probably be accepted for brands that some buyers discriminate against.

**Antimony**—The demand has been almost wholly of perfunctory character, and prices are still irregular, with a leaning more or less in buyers' favor. Hallett's quoted at 10½¢ @ 10¼¢, LX at 11¢, Portuguese (96% pure), 11½¢; and Cookson's at 14¢, in wholesale quantities.

**Tin Plate**—There has been a slight turn for the better. Weak outside holdings to the extent of 80,000 boxes or more, it is stated, have passed into the hands of firms well situated to take care of the entire quantity, and while heavy consumers manifest indifferent interest there has been sufficient improvement in the demand from jobbers and small consumers to give the market more tone. Prices are firmer, but not quotably higher, except in the instance of Coke Finish Plates, which not long ago figured as the weak spot. We quote: Coke Tins—Penlan grade, IC, 14 x 20, \$5.35; J. B. grade, do., \$5.40 @ \$5.45; Bessemer do., \$5.35 @ \$5.40; Siemens Steel, \$5.50. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$6; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.50; for each additional X add \$1.50; Allaway grade, \$6; Grange grade, \$6; for each additional X add \$1. Charcoal Terns—Worcester, 14 x 20, \$5.75; do., 20 x 28, \$11.40; M. F., 14 x 20, \$7.50; do., 20 x 28, \$15.50; Dean, 14 x 20, \$5.25; do., 20 x 28, \$10.50; D. R. D. grade, 14 x 20, \$4.90 @ \$4.95; do., 20 x 28, \$10; Mansel, 14 x 20, \$5.12½; do., 20 x 28, \$10.10; Alyn, 14 x 20, \$5.15; do., 20 x 28, \$10.30; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$10.75. Wasters—S. T. P. grade, 14 x 20, \$4.80; do., 20 x 28, \$9.70; Abercarne grade, 14 x 20, \$4.80; do., 20 x 28, \$9.60.

## New York Metal Exchange.

The following sales are reported:

THURSDAY, August 6.		
50,000 lb Copper, spot.....	12.00¢	
25,000 lb Copper, August.....	12.05¢	
16 tons Lead, spot.....	4.55¢	
25 tons Tin, August.....	20.10¢	
FRIDAY, August 7.		
25,000 lb Copper, August.....	12.15¢	
10 tons Tin, September.....	20.10¢	
10 tons Tin, August.....	20.10¢	
MONDAY, August 10.		
25 tons Tin, August.....	30.00¢	
(Seller's right to double.)		
TUESDAY, August 11.		
10 tons Tin, October.....	20.15¢	
10 tons Tin, August.....	19.50¢	
(Seller's right to double.)		
10 tons Tin.....	19.75¢	
(Sellers option to September 15, with right to quadruple.)		

## Coal Market.

The Anthracite Coal Companies are resolutely determined to restrict production to the 3,000,000 ton limit prescribed for August, and to this end both the Reading and Lehigh companies adhere to a shut down of the collieries for two days in each week all through the present month and perhaps for some time to follow. Other companies are in harmony. Any temporary loss of trade, they reason, will be reimbursed by upholding prices during the duldest period, and by realizing at a later day the advantages thus secured. The result is that no Coal can be bought below the official July schedule, as follows:

	Broken.	Egg.	Stove.	Chest-nut.
Lehigh.....	\$3.90	\$4.00	\$4.05	\$3.75
Free.....	3.65	3.85	4.05	3.75

f.o.b., less commissions to middlemen.

Pea and Buckwheat are at the lowest figures, the former \$1.90 @ \$2.15, f.o.b., the latter \$1.50 @ \$1.60. Individual companies express their confidence in the mutual arrangement now existing by offering a substantial amount for information that the schedule is being undersold. The independent Lehigh concerns adhere to the prices current for some time past. Something like activity will be looked for with the beginning of September, meantime the market is considered in buyers' favor.

The total amount of Anthracite Coal sent to market for the week ending August 1 was 895,306 tons, compared with 726,715 tons in the corresponding week last year, an increase of 168,591 tons. The total since January 1 is 21,828,441 tons, compared with 18,894,450 tons for the same period last year, an increase of 2,933,991 tons. The freights from the coal shipping ports in New York harbor are quoted at 50¢ @ 70¢ and discharge to Boston.

A telegram from Ashland says: "The north dip of the Mammoth vein has been found in the Merriam Colliery mines. It measures over 30 feet in thickness, is of good quality and will keep the colliery in operation for many years." Enormous Coal discoveries in Washington are reported, and an output of more than 2,000,000 tons is expected next year, reducing the price at Puget Sound to \$2.50 ½ ton, and at San Francisco, where it is now \$5.50, to \$5.

The longest single train ever hauled over the Reading road, and perhaps on any railroad in the world, is noticed in the Pottsville Journal. It was over 1000 yards in length, and the total gross weight of train was 3019 tons, 11 cwt. Weight of cars, 1001 tons, 200 cwt., and the weight of Coal, 2018 tons, 900 cwt. The engine, No. 955, weighs 153,040 pounds. Her cylinders are 22 x 28 inches and the drivers 50 inches in diameter.

## Imports.

### Hardware, Machinery, &c.

Baldwin, Chas. Bros. & Co., Gun Barrel, cs., 11  
Baker, Hermann & Co., Hardware, cs., 7; Arms, cs., 24; Anvils, 172  
Brunner Bros., Mach'y, parts, 5; pgs., 15  
Botany Worsted Mills, Mach'y, cs., 88  
Davis, Moses, Arms, cs., 6  
Dorey Bros., Mach'y, pgs., 67  
Field, Alfred & Co., Guns and Parts, cs., 38  
Hartley & Graham, Arms, cs., 4  
Johnson, John & Co., Mach'y, pgs., 27  
Jordan, A. J., Gun Barrels and Stocks, cs., 10  
Kahn & Burgauer, Mach'y, pgs., 3  
Lau, J. H. & Co., Arms, cs., 8  
Meacham Arms Company, Arms, cs., 20  
Merwin, H. & Co., Gun Barrels, cs., 10  
Reed & Campbell, Mach'y, pgs., 192  
Rotterdam S. S. Co., Arms, cs., 3  
Schloss & Sons, Mach'y, cs., 4  
Schoverling, D. & G., Arms, cs., 14  
Sutro Braid Co., Mach'y, cs., 3  
Werlemann, H., Arms, cs., 53  
Whitney, A. R. & Co., Drawing Plates, cs., 12  
Wiebusch & Huger, Arms, cs., 29; Anvils, 382;  
Vices, cs., 1; Hardware, cs., 2; do., case, 1  
Wyman, Chas. H. & Co., Hardware, cs., 18  
Order—Mach'y, pgs. and cs., 28; ditto, pgs., 30  
Shovels, bdis., 70

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]  
LONDON, WEDNESDAY, August 13, 1891.

The stock of Scotch Pig Iron in public stores has fallen off 1000 tons, being 503,000 tons according to last returns. Middlesborough Pig, on the other hand, has accumulated and the total is now 156,000 tons. Scotch warrants moved up to 47/3 and Middlesborough improved slightly, but the latter subsequently dropped to 39/10 and Scotch depreciated also, while Hematites dropped to 48/7. Operations have been on a moderate scale and little can be done until the London syndicate interested in Scotch warrants makes some decided move. Exports last month were only 75,000 tons, against 126,000 tons in July, 1890.

Latest sales of warrants were at 47/2 @ 47/3 for Scotch, 39/7½ for Cleveland and 48/ for Hematite.

Pig Tin prices have averaged somewhat higher, but latest transactions were at about 10/ decline from the best figures of the week. Dealings have been on a moderate scale, and owing to apparent scarcity of cash lots buyers have been more disposed to purchase forwards. Australian Tin is scarce and commands a premium of 10/ over Straits.

The Copper market has been irregular, with lower average prices for the week. Cash warrants appeared to be rather scarce early in the week, but the advance in price to £53. 2/6 on the 6th inst. brought out a good many and prices dropped £1, although statistics show an improvement in the deliveries.

In Tin Plates there has been a fair, steady business except for American account, the purchases of which were limited chiefly to oil sizes that are affected by the new Tariff to a moderate extent only. Many of the Welsh works are not contributing supplies at present, and Plates available for immediate shipment find ready sale. Makers are not pushing production. Exports last month 17,000 tons, against 46,000 tons in July, 1890. Quantity sent to the United States only 4000 tons, against 37,000 tons a years ago. Stocks at shipping ports estimated at 119,000 boxes, against 306,000 boxes last year.

**Scotch Pig Iron.**—Makers' prices stand practically the same as they were a week ago, and business continues light.

No. 1 Coltness, f.o.b. Glasgow.....	60/
No. 1 Summerlee, " " " " " "	58/
No. 1 Gartsherrie, " " " " " "	58/
No. 1 Langloan, " " " " " "	60/
No. 1 Carnbroe, " " " " " "	49/
No. 1 Shotts, " " " " " "	60/
No. 1 Glengarnock, " " " " " "	59/
No. 1 Dalmeilington, " " " " " "	51/
No. 1 Eglinton, " " " " " "	50/
Steamer freights, Glasgow to New York, 2/;	
Liverpool to New York, 10/.	

**Cleveland Pig.**—The market is unsettled and irregular, with makers quoting at 40/ @ 40/3 for No. 3 Middlesborough, f.o.b.

**Bessemer Pig.**—Makers' prices are down, in sympathy with the decline in warrants, and business is slow. Sellers at 49/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

**Spiegeleisen.**—There is little doing and prices are unchanged. English 20% quoted at 95/, f.o.b. shipping port.

**Steel Rails.**—The market is very quiet and prices tend more or less in buyers' favor. Heavy sections quoted £4. 5/, and light sections £4. 15/ @ £5. 15/, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—Scarcely anything doing and prices unsettled. Makers quote £4 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—Makers offer at somewhat reduced prices, but sales are light. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—Demand is without the slightest improvement and prices are rather weak. Bessemer quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

**Old Iron Rails.**—There is little trade passing and prices remain as before. Tees quoted at £2. 17/6 and Double Heads £3 @ £3. 2/6, f.o.b.

**Scrap Iron.**—Demand continues moderate and prices are barely steady. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

**Crop Ends.**—Market dull and without change. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

**Tin Plate.**—No change noted to-day. Business moderate. We quote, f.o.b. Liverpool:

1C Charcoal, Alloway grade.....	15/3 @ 15/6
1C Bessemer Steel, Coke finish.....	13/9 @ 14/
1C Siemens " " " " " " " "	14/ @ 14/3
1C Coke, B. V. grade.....	13/3 @ 13/6
Charcoal Terne, Dean grade.....	13/3 @ 13/9

**Manufactured Iron.**—Only a moderate business passing, and prices without radical change, but rather weak. We quote, f.o.b. Liverpool:

Staff. Marked Bars.....	£ s. d. @ 8 10 0
" Common " " " " " "	6 10 0 @ 6 12 6
Staff. Bl'k Sheet, singles.....	7 2 6 @ 7 2 6
Welsh Bars (f.o.b. Wales).....	5 10 0 @ 5 12 6

**Tin.**—Market slow to-day and prices rather weak at a slight decline. Straits quoted at £91. 2/6, spot, and £91. 7/6 for three months' futures.

**Copper.**—Market quiet at present, and prices irregular. Merchant Bars quoted at £52, spot, and £52. 10/ three months' futures. Best Selected, £57.

**Spelter.**—Prices as before, and the market steady, but quiet, at £23. 12/6 for ordinary Silesian.

**Lead.**—There has been little trade, and demand is moderate. We quote at £13. 5/ for Soft Spanish.

At Baltimore a sailing vessel is loading with 1000 tons of foundry iron made by the Tennessee Coal, Iron and Railway Company, for shipment to San Francisco. Pacific Coast foundries have tested Southern iron and find that it compares well with the foreign irons usually supplied to that market.

In view of the exhaustive trials made by the Navy Department with the result of demonstrating the superiority and greater tensile strength of nickel steel as a resistant armor for naval vessels, the Secretary of the Navy has contracted with Carnegie, Phipps & Co. for ten 3 inch protective deck plates, upper layers. The relative cost of these plates, as compared with pure steel, will be studied, and if satisfactory terms can be made this kind of armor will be adopted for the armored cruiser New York and Cruiser No. 12.

**River Front Improvements.**—The control of the New York City water front by the local government, which largely passed into private hands, is being gradually recovered by the Dock Department. Halves of old piers on the North River side, which cost \$200,000, are readily leased at \$40,000 a year. Where property cannot otherwise be obtained resort is had to condemnation through the Corporation Counsel. One result will be the widening of the street on the river front, which is becoming a more pressing necessity, particularly near the foreign steamship landings. The estimated expense of the improvements now taking place will be about \$1,000,000, while the annual income will be much increased. The final result will be much more ample steamship accommodation, facilitating the handling of both ship and cargo, as the piers will be much lengthened, and at the same time local traffic will be less obstructed by the blockade of vehicles. In due time the line of the Harlem River will receive attention on both sides of the city.

Salem, Va., its advantages and attractions as a place of residence, business, investment and manufacturing, are fully set forth and illustrated in a book of information issued by the Salem Improvement Company. The natural resources of Southwest Virginia, its development, railroad facilities, prospects, &c., are portrayed, and abstracts from leading authorities are cited. A copy of this book will be sent free on application to the Salem Improvement company.

The Reeves Pulley Company, Columbus, Ind., write under recent date as follows: "We are having a good steady trade on pulleys, and have recently made some very heavy shipments. Trade on both coasts is particularly good. Export trade is also better than for the past three months."

Edward Atkinson adopts the theory, now generally accepted, that cotton fires usually arise from spontaneous combustion, the result of contact with cotton-seed oil and rapid oxidation.

The Atlantic Trust Company of New York have filed a bill at Chattanooga for the foreclosure of a mortgage of \$60,000 against the South Tredegar Iron Company, which about two years ago gave a mortgage deed to a number of New York financiers to secure the payment of \$60,000 borrowed money, naming in the deed the Atlantic Trust Company as trustee. Bonds were issued by the company running ten years and bearing 6 per cent. interest, with interest payable semi-annually. It was cited in the contract that if the company should become six months in default in the payment of interest when due, then the whole bonded indebtedness would become due at once. The Atlantic Trust Company, as trustee, for the benefit of the bondholders, filed the bill for the purpose of enforcing the mortgage, alleging that the South Tredegar Iron Company are insolvent and unable to meet their obligations.

The foreign ore freights have declined further, and are now offered as low as 6 to 7 shillings, so that foreign ores can be laid down at about 8 cents per unit.

Ground has been broken at Yale College, Hartford, Conn., for the Sheffield Scientific School's new building, which will cost \$200,000.



# HARDWARE.

## Condition of Trade.

**T**HE CONDITION OF TRADE generally continues to improve. Jobbers are noting very satisfactory returns from their travelers, but manufacturers and their agents find business more quiet, although they are nearly all busy filling orders previously received. The absence of large orders at this season is naturally felt by this class of trade. Collections are not very satisfactory, and, in fact, are frequently spoken of as disappointing.

### Chicago.

(By Telegraph.)

Shelf Hardware is gaining gradually from week to week, but more particularly in Builders' Hardware than any other line. It makes up in value what it loses in bulk. Prospects are brighter than ever for a very heavy fall trade, but the extremely hot weather now prevailing in the Northwest may delay it for some little time. The Heavy Hardware trade is of huge proportions. A local house booked 30 carloads of Wagon Stock in a single order this week. The demand for Iron and Steel from small consumers continues unabated. Sheet Copper has evidently sounded the lowest depths. Sales have recently been made at 25 per cent. off the list. The combination seems to have been completely broken. Brass Tubing and Roll and Sheet Brass now selling at 30 to 35 per cent. off.

### St. Louis.

(By Telegraph.)

Jobbers of Hardware continue to report a steady increase in trade. In view of the favorable condition of the crops country dealers are buying largely in anticipation of a heavy fall trade. The demand for Harvesting Tools continues to be quite active, and small Garden Implements are also selling in good quantities. Cartridges are not as firm as they were and lower prices may shortly prevail. Jobbers are doing a large business in Barb Wire bought before the Columbia Patent Company went into operation, and the market is unsettled to some extent. Wire Nails are in active demand, but Cut Nails are extremely dull. Tin Plate continues to sell freely at unchanged prices. Copper and Copper goods are easier. Money is tight and, no doubt, will be until after the crops have been taken care of.

## Notes on Prices.

**Cut Nails.**—The situation remains unchanged. Manufacturers and agents offer the same prices as last week, and the demand has been only moderate. We continue our quotations of \$1.60 to \$1.65 for the Wheeling district, and \$1.50 to \$1.55 for the Eastern district, round lots at mill, with the usual 25 or 30 cent average.

*Chicago, by Telegraph.*—Manufacturers of Steel Cut Nails are trying to advance prices. Wheeling mills ask at least 5 cents per keg more than they were willing to take last week. Some of them are shutting down to make repairs and improvements which will curtail the output for a time. Local manufacturers are quoting \$1.70, Chicago, for 30-cent average, but continue to shade this for desirable orders. Business has been very fair for some time and manufacturers are well supplied with orders for this and next month. Jobbers quote \$1.75 from stock.

**Wire Nails.**—The improvement in the demand continues, without change in quotations, although as stated last week some makers are holding higher than the market in the hope of higher prices. Stocks in the hands of jobbers are not large, except on the Pacific Coast. Manufacturers are generally running full time, and the promptness with which orders are filled indicates good stocks at mill. We quote \$2 to \$2.10 for carload lots; small lots from store, \$2.15 to \$2.25.

*Chicago, by Telegraph.*—Manufacturers' agents are having a heavy demand from all classes of buyers, both large and small. They have not been able so far to advance prices, but, on the other hand, there is no special weakness to report. Quotations on factory lots range from \$2.05 to \$2.10, Chicago, by rail delivery. Jobbers quote \$2.15 for small lots from stock.

**Barb Wire.**—The prices of the Columbia Patent Company as given last week control the market, being cheerfully accepted by all classes of trade, who are, as a rule, glad to have the prices of this article fixed on a firm and uniform basis. Sales have not been large, but there is no holding back in the expectation of a break in prices. Washburn & Moen Mfg. Company, who are the only establishment not controlled by the Columbia Patent Company, make uniform quotations. The following are the official prices:

F.o.b. cars Pittsburgh and Cleveland, \$2.75 per hundredweight for Painted, \$3.25 for Galvanized.  
5 cents per hundredweight advance on above f.o.b. cars Cincinnati and Allentown, Pa.  
10 cents per hundredweight advance for f.o.b. cars Joliet and Chicago.  
15 cents per hundredweight advance for f.o.b. cars St. Louis.  
33 cents per hundredweight advance for f.o.b. cars Omaha.  
35 cents per hundredweight advance for f.o.b. cars Lawrence, Kan.  
75 cents per hundredweight advance for f.o.b. cars San Francisco.

All the above prices are subject to 5 cents discount per hundredweight in carload lots. Terms: 30 days, or 2 per cent. discount for cash within 10 days from date of invoice.

*Chicago, by Telegraph.*—Jobbers continue to quote \$2.80 for small lots of Painted and \$3.35 for Galvanized, and report their trade rather quiet. The manufacturers, however, report that they are entering numerous orders from large buy-

ers. Two hundred accounts have been opened by the Columbia Patent Company since they took charge of sales. Quite a number of contracts had been made by manufacturers prior to this time, but the business done in that way was not large enough to affect the volume of new business seriously. The shorter time given buyers has also caused some holding back, but the complaint is not very serious on that point, and in a very little time will be overcome. A heavy business is expected shortly from present indications.

**Steel Goods.**—An error occurred in our last issue in printing the revised list adopted by the Fork and Hoe Makers' Union at their meeting June 3, by which Field Socket and Shank Hoes were referred to as having been advanced 25 cents per dozen, list, when they were, in fact, advanced 50 cents per dozen. The trade will please note the correction.

**Wrought-Iron Pipe.**—The manufacturers of Wrought-Iron Pipe held a meeting at Pittsburgh last week at which the discounts on Butt and Lap Welded Pipe, both Black and Galvanized, were reduced 10 per cent. Boiler Tubes, 3 to 6 inches inclusive, were also advanced to discount 60 per cent. The following are the present quotations:

	Discount.
Butt, Black.....	52½ %
Butt, Galvanized.....	42½ %
Lap, Black.....	62½ %
Lap, Galvanized.....	50 %
Boiler Tubes, up to 2½ inch inclusive.....	55 %
Boiler Tubes, 3 to 6 inch inclusive.....	60 %
Boiler Tubes, 7 inch and larger.....	55 %
Casing.....	55 %

These changes were made on account of the very low prices at which the goods have been selling, as well as from the large demand which the manufacturers are at present enjoying.

**Cordage.**—The National Cordage Company last week consummated the purchase of the Boston Cordage Company. The Boston company were a consolidation of Eastern mills, and were aggressive and disagreeable competitors of the National Cordage Company. The latter disclaim any intention of advancing the price of Cordage, although they intimate an advance may take place in the regular course of business as the fall trade is entered upon. While the National Cordage Company have obtained control of the Boston concern, there are a number of Cordage mills, both East and West, who are still competitors. In Binder Twine the National people compete with the Racine and Deering mills, as well as others.

**Glass.**—The condition of the Glass market remains unchanged since our last report. Stocks of Glass in manufacturers' hands are becoming reduced. Demand is reported as good, and prices firm. While manufacturers are naturally anxious to reduce their stocks to a minimum by the time

factories start up, there seems to be no inclination on their part to make concessions in prices to this end. It is reported that the wage committees failed to agree upon a scale, but there is no contest expected to interfere, and factories may start up no later than usual. It is impossible, however, to predict what the outcome of the wage question will be until the matter is definitely settled. Business in imported Window Glass is reported fairly good, with encouraging prospects for the near future. Prices on Glass have not changed since our last report, and are quoted as follows: American Window Glass, in carloads, 80 and 10 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 and 5 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent., and Imported Plate at discount 60 per cent.

**Lemon-Juice Extractors.**—The Manny Lemon-Juice Extractor Company, Rockford, Ill., write us that the price of the Improved Extractor to the regular trade is \$2 per dozen. To the best of their information this price is firmly maintained. The regular rate for the Standard is \$1 per dozen, although this price is frequently shaded by jobbers.

### Trade Items.

**THE ANNUAL MEETING** of the Southington Cutlery Company, Southington, Conn., was held on the 28th ult., when the following officers and directors were elected for the ensuing year: M. C. Ogden, president; J. W. Gridley, secretary and treasurer; and M. C. Ogden, George Munson, R. A. Neal, W. R. Walkley, E. J. Neal, J. F. Pratt and J. W. Gridley, directors.

**THE DETROIT GALVANIZING AND SHEET METAL WORKS**, Detroit, Mich., having recently purchased the patent for Michigan, Ohio, Indiana, Illinois and Wisconsin, are putting on the market the Harland Self-Sealing Oil and Gasoline Can, which they advise us is already meeting with a large sale. They have appointed H. H. & C. L. Munger, 142 Lake Street, Chicago, as their Western agents for this Can and all other goods which they are manufacturing.

**THE NORTHWESTERN HARDWARE COMPANY** have been organized at St. Paul, Minn., with a capital of \$50,000. The officers of the company, who will do a retail Hardware business, are as follows: Freeman P. Strong, president; Robert A. Kirk, vice-president; Frank W. Sachse, secretary; and Datus F. Brown, treasurer.

**HENRY M. GAY**, 125 Nineteenth St., Milwaukee, Wis., has rearranged with Woodrough & Hanchett Co., 19 Lake St., Chicago, and will continue to represent them in Wisconsin and Michigan.

**THE AMERICAN WIRE NAIL COMPANY**, Anderson, Ind., are now offering both Annealed Fence Wire and Wire Nails, and will ship mixed cars of these materials from their mills. They are also prepared to make less than car lot shipments of the same materials. The company allude to their facilities as Wire Rod, Wire and Wire Nail manufacturers as placing them in a position to offer the lowest obtainable prices and prompt service. Their Nail capacity has received a material increase recently and customers are assured that orders will be filled without delay.

A CABLE DISPATCH announces the arrival of Mr. Lyon of Sherman & Lyon at Cape Town, South Africa. Mr. Lyon sailed from Southampton on the Union Steamship Company's new steamer Scot. This was her maiden trip and was accomplished in the remarkably short time of 15 days.

A NEW 32-PAGE CATALOGUE containing the specialties of the W. J. Lloyd Mfg. Company of Philadelphia will soon make its appearance, in which some new goods will be shown.

**THE ENERGY MFG. COMPANY** of Philadelphia make an offer in their advertisement which shows their confidence in their goods, as well as their desire to have their merits tested. They inform us that the shipments of their Lathe Center Grinder are not confined to this country, many being in use in England.

## The Cost of Freight.

(Continued.)

BY R. C. S.

**READING REPLIES** to my former article on the cost of freight, I find information on one point alone, and of such a nature that it would be impracticable where invoices are long and time is money.

What I gather from these replies is, that each class of goods is to be weighed after the packages are opened, and then its pro rata of weight of package and cost of drayage, &c., added. This would be exceedingly annoying, for during the time you are weighing and figuring your goods are in the way of business, and probably likely to be stolen.

I find that by keeping a list of estimated weights you can accurately enough for practical purposes figure delivered costs when goods are at hand, and, at the same time, by carefully observing the pro rata the weight of case bears to the general weight of packages of different natures, you can estimate the delivered costs of goods quoted from different points, some with and some without freight allowances, as set forth in my former article.

Another advantage of figuring by estimated weights is, your invoices may be ready for the clerk to mark goods before the goods are all opened and have been in the way for some time.

If the price of iron is so important to the manufacturers that they have to be where it is cheap to compete successfully with each other, then must the weight be, as iron is sold by weight. If the cost of manufacture is about the same to all manufacturers, and I see no reason why it should not be so, then it follows that there must be a certain approximate uniformity of weight of like classes of goods of all manufacturers, for competition is too close for one manufacturer to make a very much greater profit than another on unpatented goods.

It is practically unnecessary in treating of this to consider the cost of selling.

The distributors, in figuring the delivered cost of an invoice of goods by estimated weights and freight rates, will see a difference between the sum of the weights thus found and the shipping weight, because of the slight

difference in weight of like classes of goods of different manufacturers, and the weight of cases and packing not being considered. Of course if drayage is charged this must be a further consideration.

The following rule will be found convenient to estimate delivered cost according to the method of estimated average weights.

Find the difference between the estimated total weight and the shipping weight, and to this add the number of pounds the amount charged for drayage would bring at the freight rate per hundredweight. Find what per cent. the result is of the estimated total weight, add, or subtract, as the case may be, this per cent. of weight to or from the estimated average weight of each item, and multiply by the freight rate per pound. The sum total of the above should fully equal the cost of invoice delivered in the store, and should balance with the first cost of invoice added to its freight and amount of drayage.

I give below an invoice with delivered cost worked by the estimated weight and by the percentage on cost methods.

3 dozen Stebbins' Molasses Gates,		
No. 3 at \$9.....	\$27.00	
Less 75 per cent.....		\$6.75
12 Planes, No. 9, at \$1.40.....	16.80	
Less 55 per cent.....		7.56
2 gross Coverts' Snaps, No. 502,		
at \$5.50.....	11.00	
Less 50 per cent.....		5.50
102 sets Iron Wheel Bed Casters,		
No. 1, at 14 cents.....	14.28	
Less 55 per cent.....		6.42
1/2 dozen Bonney's Spoke Trimmers, No. 2.....	10.00	
		5.00
Total.....		\$31.23
Dray.....		.25

Total..... \$31.48  
Freight: 317 pounds at 72 cents cwt. = \$2.28  
1 case.

We estimate the weight of each class as follows: Molasses Gates 104 pounds dozen, Planes, 7 pounds each; Coverts' Snaps 12 pounds gross; Bed Casters 10 pounds dozen sets; Spoke Trimmers 9 pounds dozen. By multiplying the estimated weight of each article, dozen or gross of articles, as the case may be, by their respective quantities, and adding the results, we have 235 pounds. The shipping weight is 317 pounds, which gives a difference of 82 pounds between this and the estimated weight. To this difference add 35 1/4 pounds, which is the equivalent of 25 cents charged for drayage, in pounds, at 72 cents per hundredweight; 82 and 35 1/4 pounds = 117 1/4 pounds, which is 50 per cent. of the total estimated weight. Now, by adding 50 per cent. to the estimated weight of each item:

1st item.—To 33 pounds add 50 per cent. = 49 pounds at 72 cents hundredweight = 35 cents; 35 cents added to \$6.75, the first cost of Molasses Gates = \$7.10. Continue to work the delivered cost on all the items throughout the invoice in like manner.

Taking the percentage on cost method, and comparing the two invoices, item by item, as worked delivered by each, we have:

	By estimated average weight.	By percent- age on cost.
1st item.....	\$7.10	\$7.29
2d ".....	8.46	8.16
3d ".....	5.75	5.96
4th ".....	7.34	6.94
5th ".....	5.11	5.41
Total.....	\$33.76	\$33.76



Both of the above will balance with the amount of invoice with freight and drayage added, viz.:

Amount of invoice.....	\$31.23
Drayage.....	.25
Amount of freight.....	2.28
Total.....	\$33.76

One can hardly question that the estimated weight method is the better. First, you can figure delivered cost accurately without weighing each little article in every invoice; second, you can calculate delivered costs from quotations. I am daily making my list of estimated average weights more complete, and am gaining such information as will enable me both to reasonably understand the varied quotations from the various factories in different places, and to quote delivered to retail dealers

## Door and Window Hardware

BY W. W. B.

**S**UITABLE AND APPROPRIATE trimming is something that is too often slighted, both by owner and architect, and the tendency to cheapen the entire contract by reducing the cost of the Hardware is daily evidenced by the appearance of some of our buildings. As a rule, the Hardware is a neglected matter until the building is nearly completed, and then as an offset to the excess in expenditure in other details, the Hardware allowance is cut down. The result is just what you might expect. A handsome house or apartment with everything of an elegant appearance, the floors tiled, the walls beautifully frescoed and the woodwork handsomely polished, while the Hardware throughout is of the cheapest class, not fit for a tenement. There is an abundance of such Hardware on the market. Take in the first place a front door, which is at all times before the eyes of the public. If trimmed artistically it at once makes a good impression, and to be artistic does not necessarily mean at the same time expensive, for a good Lock that is reliable can be had at a very reasonable figure, and a plain Grille will pay for itself in effect. Ornamental Hinge Straps will also add wonderfully to the appearance of a house, while on the other hand a cheap Lock and trimming will cheapen a door, no matter how handsome it may be. A door cheaply trimmed makes just the same impression as a soiled shirt front on a person, both are criterions by which you may judge of the rest of the make up.

Locks for interior doors need not be either elaborate or intricate, but they should be in keeping with the other appointments; if an ornamental design is too costly then plain trimming is by all means in good taste and, like black clothes, always in keeping. When the cheap ornamental designs have the word cheap woven in the pattern, the owner makes a sad mistake when using such goods; the public notice and are influenced by such apparently little things. Plain Bronze Hardware is but very little more expensive than the cheap trade ornamental goods, and its application shows vastly better taste. Then, again, the utter disregard of the general architecture of the building in applying trimmings, also of wood finishes, is a very common mistake. The effect of an elegantly carved door of a Romanesque style trimmed with Colonial Hardware is not only an example of bad taste, but is a mistake that means a money loss, as a tenant may not be artistically educated, still a feeling of inconsistency will be experienced, for no person is so constructed that discord will not affect to a more or less degree.

No clause in the contract is so much neglected, nor none of more importance, than that one relating to Hardware. In the matter of Butts there are many varieties from which selections may be made, but experience and judgment should be brought to bear in this matter. Bronzed Iron Butts for the purpose of hanging the door do the work as well as the more expensive solid bronze, but they will not remain bronze but a short time. The appearance of iron on a hardwood door, where the lock trim is bronze, certainly is not pleasing. Then, again, the mistake of cheapening the trimming by using a light Butt is a most serious one.

Nothing can be more provoking than a door that drags in closing, or that will not close at all. While a settling of the building affects this matter more or less, it is more often the case of the Butt being too light or too small, so that the weight of the door causes a sag that the Butt will not withstand. A Loose-Joint Butt is a little less expensive than the Loose Pin, but is not so durable nor convenient, as in a Loose Joint there is only one bearing, and consequently more tendency to give and wear, thereby causing the same trouble as in the case of using a light Butt. The Loose Pin has three bearings, and in case of a necessity to remove the door it is much easier to do so. A conspicuous fault in the present cheap trimming of flats and residences is the fact that the Keys are interchangeable, or, in other words, the Key that opens the hall door is more than likely to operate the Lock on the pantry door or linen closet and *vice versa*. This may be overcome by specifying in contract that the Locks have two or more tumblers and all to be different.

Then, again, we find that the front-door Lock is of a most approved make and very secure, while the Sash Fastenings throughout the building are such that they may be opened by simply inserting a pen knife between the meeting rails of the windows and slipping the catch to one side. Good Fastenings should be used in first-floor window fastenings, as in seven cases out of ten the sneak thief will select a window rather than a door as a means of entrance. Although we do not know of a burglar-proof Fast on the market, still there are some that are so secure as to be immovable unless glass in window is broken to reach them. At the same time it is very desirable to have a Fast that will bind the lower and top sash together, thus preventing a draft between; also the annoyance of window rattling. A Fast that simply secures the window from being raised is not a suitable one. Slight attention to the minor matters and better satisfaction will be the result.

## Trade Topics.

**Hardware Labels.**—A progressive Hardware merchant in New York State calls attention in a communication to the derirability of manufacturers leaving sufficient space on box labels, in which the retailer may mark the cost and selling price of the articles contained in the package. Referring to the present practice, he remarks:

There is hardly an instance in which the manufacturer does this, but will plaster the whole end of the box over with unimportant matter, leaving no space for the retailer's convenience.

It is this merchant's custom to use lists to a large extent, and also to mark packages with the cost and selling price, so that the younger clerks will be less liable to make mistakes. He calls attention to the undesirability of being obliged to

mark prices on the side of packages, and to the part manufacturers might take in obviating this trouble.

To be compelled to pull out a box in order to get at the price that is marked on the side is a great inconvenience many times, and if manufacturers would take note of this and act accordingly it would be a great convenience.

We have already touched upon the desirability of having labels plainly printed on paper of such color as to be read with ease at a distance. Any device that lessens the labor or allows business to be carried on with greater ease is worthy of discussion. There may be other improvements regarding box labels that our readers can suggest.

**Department Stores.**—We have received the following emphatic protest against the tendency which is observable in many cities toward department stores and the serious injuries to the regular trade:

It is strange that so many intelligent men as are to be found among the American manufacturers and jobbers will tolerate those so-called "department stores," which are met with in every large city in the Union, and which bear against the retail trade and unsettle the old and good business principles. Any intelligent man must admit that the system carried on by department stores, if followed out in their extreme consequences, is ruinous to every community, and that no man engaged in business, and doing it in a honorable way, can compete with all the questionable tricks put in practice by the department stores. Manufacturers and jobbers, who have it in their power to correct this evil, may ignore these facts, but they will regret the consequences. The continuance and development of the system will help to ruin the small retailers, and the jobbers, too, will thereby suffer from it. Not only this, it will unsettle real estate values, and every man who owns a house and home will find out that the goods he bought in a department store are the most costly he ever bought. But do we wish to see such a state of affairs? Is it not time, then, for the people at large, and the manufacturers and jobbers especially, to remedy this evil? If the department stores could not get any goods from manufacturers or jobbers they could not do business. Should not business men uphold business principles? Manufacturers would sell just as many goods, and prices would not be so demoralized if they would antagonize these stores. Everybody could make a living in the good old way, making a little on every article sold, which works evil to none, and prosperity to all. The writer throws out this spark of thought, hoping that it may catch, and that a combination may be inaugurated against this common enemy.

**Oil-Cloth Rack.**—We have an inquiry from a Hardware house in Ohio for a description of the best method of handling Oil Cloth, and shall be glad to receive from any in the trade information on this subject. It is referred to as one in which many Hardwaremen in different parts of the country would be interested, and has not, we believe, been touched upon in the series of articles on the arrangement of stores.

**Shelf Boxes.**—A Philadelphia Hardwareman is considering the advisability of doing away with part of his wooden boxes and substituting in their place

boards nicely finished in natural wood, hung with hinges, and keeping goods in original packages back of the boards. The shelf openings are 6 x 36 inches, and he intends sampling the goods kept in each opening upon the board in front. The boards are intended to be flush with the shelves when closed. Before going to the expense of making the alteration he desires an expression on the subject from those who have had experience in this direction. We suggest that our readers also advise him whether it is best to hinge the boards at top or bottom, if any favor this arrangement.

### Trade in the Northwest.

The following advices from a prominent jobbing house in the Northwest will be of interest as reflecting the condition of things in that section:

We are now just commencing to harvest the largest crop that has been produced in this country for several years. The weather at the present time is very favorable for the safe securing of the same, and the outlook for the Northwest is very hopeful. Usually there is a large falling off in business in our line after the Fourth of July, continuing until nearly the first of September, but this year our business has kept up, and at the present time we are very busy filling orders for all kinds of goods, including not only seasonable goods, but those needed for fall business. We look for a more active business this fall than we have ever seen before.

### Price-Lists, Circulars, &c.

**NATIONAL BOLT, NUT AND RIVET WORKS**, Reading, Pa.: Machine and Car Bolts, Button Head Bolts, Blank Bolts, Stub or Bolt Ends; Carriage, Plow and Elevator Bolts; Lag and Coach Screws; Cold-Punched and Hot-Pressed Nuts, Rivets, &c. This Price-List is issued as a preliminary one, and the company's regular and complete Catalogue is to follow. Special attention is directed to their Iron and Steel Track Bolts, Cold Punched Nuts, Iron or Steel Rivets of all styles. They state that they can supply a high grade Bar Iron, rolled to exact size, of smooth finish and uniform quality.

**EWALD IRON COMPANY**, St. Louis, Mo.: Tennessee Charcoal Bloom Bar, Plate and Sheet Iron, Flange, Fire Box and Boiler Steel, Common Iron in Bar, Plate and Sheet, Angles, Tees, Channels, &c. They also carry all sizes of Seebohm & Dieckstahl Dannemora Cast Steel, Sheffield, England.

**THE VAN CLEVE GLASS COMPANY**, Cleveland, Ohio, are sending to their customers a neat circular glass paper weight, accompanied by their price-lists of American Window Glass, Polished and Beveled Plate Glass, Ornamental Glass, Mirrors and Forest City Window Screens.

**MAGNOLIA ANTI-FRICTION METAL COMPANY**, 74 Cortland street, New York, are sending out a metallic end hanger, on which is a colored representation of magnolia flowers and leaves. The hanger is designed to direct attention to the Magnolia Anti-Friction Metal manufactured by this company.

**A. E. KIEL & Co.**, Montrose, Iowa: Kiel's Self-Weighing Powder Case. This is made of light colored wood, trimmed in black walnut, with silver-plated screws. It is 18 inches high, 12 inches wide and 12 inches deep. The inside can is made of metal and will hold 25 pounds of powder. It is designed to reduce the danger of

handling powder, and every Case is warranted to weigh correctly any amount from 1 ounce to 1 pound.

**THE STARR MFG. COMPANY**, Halifax, N. S.: Genuine Acme Club Skates. Acme VC. Skeleton, Hockey and Racing Skates. In this, their twenty-fifth annual price-list, the manufacturers state that the Genuine Acme Skate is used in Great Britain, Germany, Russia, Austria, Norway and Sweden, and other European countries, as well as in Canada.

**KEENE MFG. COMPANY**, Keene, N. H. Skates, Curry Combs and Hack Saw Frames. In their catalogue, 1891-92, they call attention to their Long Reach Club Skate, which they state has stood the test of six years' use. They explain that the grip on the sole of heel is tightened or loosened without removing the Skate from the foot, and that the Skate is automatic in its action, requiring no wrench or key to adjust it.

### It Is Reported—

That **Bauer & Co.**, Hardware and Implements, Petaluna, Cal., have disposed of their business to a new firm under the style of **Bauer & Schluckebier**.

That **J. A. Backus**, dealer in Hardware, Malden, Mass., has sold out to **Mr. Brock**.

That **Sharon E. Jones**, dealer in Hardware at Richmond, Ind., has become the proprietor of a Hardware store at **Anderson, Ind.**

That **William Griffith** has purchased the interest of **G. W. U. White** in the Hardware firm of **White & Griffith**, Topeka, Kan., and will continue the business alone.

That **L. A. Bigelow** has purchased the Hardware and Wagon stock of **A. P. Lowell**, Brockton, N. Y., and will continue the business as formerly.

That the partnership heretofore existing between **George A. Wolf** and **Edward H. Erk** in the Hardware and Farm Implement business at **Hollandsburg, Ohio**, has been dissolved by mutual consent, **Mr. Erk** retiring and being succeeded by **A. C. Anderson**. The new firm will be known under the style of **Wolf & Anderson**.

That **Hawkins & Corwin**, dealers in Hardware, Geneva, N. Y., have just moved into their new quarters, which are large and commodious, the store being 170 feet in depth and fitted up with modern improvements. They will carry a first-class Hardware stock.

That **Géo. H. Corbin** has purchased the stock of Hardware, Stoves, &c., of **H. H. Mason**, Liberty, Neb., and will carry on the business as heretofore.

That **Charles Brand** and **George Lane** will open a Hardware store at **Chambersburg, Pa.**, about October 1.

That **J. W. Johnson & Co.**, Hardware dealers at **Key West, Fla.**, expect to open a branch store in that city about September 1.

That the **Drew Hardware Company**, Jacksonville, Fla., are about to take possession of their new and commodious quarters in the **Benedict Block**.

That **E. M. Whitfield** has purchased the stock of Stoves, Hardware, &c., of **J. T. Atkinson**, Lake City, Iowa, and will continue the business.

That **D. Thompson** and **R. J. Clark** have sold their Hardware business at **Saginaw, Mich.**, and gone to **Port Huron**, where they have purchased a large Hardware store.

That **Jacob Nauwerth** and **W. P. Saunders** have consolidated under the title of **Saunders & Nauwerth** at **Los Angeles, Cal.** They will carry a stock of Stoves, Hardware and Tinware.

### Exports.

PER SHIP NEBO, JULY 10, 1891, FOR SYDNEY, N. S. W.

By **H. W. Peabody & Co.**—6 cases Nails, 1 case Ladders, 3 cases Lanterns, 1 case Hardware, 34 cases Lampware, 3 cases Hardware, 1 case Hardware, 3 dozen Hoes, 12 dozen Edge Tools, 168 pounds Whetstones, 2 crates Sandpaper, 1 bundle Mop Handles, 40 Ladders, 2 cases Hardware, 1 box Rivets, 1 case Wrenches, 27 cases Hardware, 1 case Glue.

PER BARK BOREAS, JULY 11, 1891, FOR PORT NATAL, SOUTH AFRICA.

By **Coombs, Crosby & Eddy**.—128 Plows, 5 cases Agricultural Implements, 500 reels Barb Wire, 2 crates Harrows, 6 crates Ladders, 1 case Picks, 66 dozen Hinges, 1 dozen Axes, 9 gross Hardware, 12 dozen Traps, 1 dozen Scythe Snaths, 3 cases Stone.

By **Arkell & Douglas**.—2 cases Ladders, 6 cases Carriage Hardware, 6 cases Mangles, 78 cases Plows and Parts, 4 cases Hatchets, 11 packages Lawn Mowers.

PER BARK OROMASO, JULY 13, 1891, FOR BRISBANE, QUEENSLAND.

By **A. James**.—7 packages Lawn Mowers.

By **Edward Miller & Co.**—55 packages Lamp Goods.

By **F. & J. Myer**.—35 dozen Hardware, 2 reams Sandpaper.

By **Strong & Trowbridge**.—900 Bolts.

By **H. W. Peabody & Co.**—12 Shellers, 24 dozen Hammers, 3 cases Farming Implements, 3 gross Graters, 2 cases Hardware, 36 sets Axes, 103 cases Agricultural Machinery.

By **Arkell & Douglas**.—55,900 pounds Barb Wire, 24 Meat Choppers, 26 Lawn Mowers, 23 Refrigerators, 12 dozen Rakes, 1 dozen Fire Arms, 36 dozen Lanterns, 77 Barrows, 116 dozen Axes.

By **S. Hoffnung & Co.**—6 Refrigerators, 10 dozen Hammers, 2 dozen Saws, 5 dozen Wrenches, 18 dozen Hoes, 12 dozen Locks, 6 dozen Wrenches, 2 dozen Tills, 5 cases Lamp Goods, 2 cases Freezers, 1 case Rakes, 1 case Saws, 21 dozen Cow Bells, 6 dozen Traps, 1 case Bells, 1 case Locks, 1 dozen Corn Mills.

By **R. W. Forbes & Son**.—12 Plows, 3 cases Axes, 1 bale Rubber Belting, 13 dozen Forks, 4700 Bolts, 3 bundles Hardware, 5 packages Lampware.

By **Maillet & Quereau**.—2 cases Wrenches, 2 cases Nails, 1 case Cutlery, 5 cases Meat Cutters, 2 cases Sad Irons, 41 dozen Tools, 1 barrel Hoes, 14 dozen Tools, 1 case Saws, 3 cases Lawn Mowers, 1 case Traps, 3 cases Hardware, 2 cases Rakes and Hoes.

By **Arkell & Douglas**.—16 cases Tools, 41 cases Hardware, 3 cases Saws.

PER BARK ESSEX, JULY 13, 1891, FOR AUCKLAND, NEW ZEALAND.

By **H. W. Peabody & Co.**—13 cases Hardware, 30 dozen Edge Tools, 1 case Wireware, 31 packages Hardware, 1300 feet Rubber Hose, 1000 Metallic Cartridges, 2 packages Lampware, 1 case Hardware, 1 case Air Guns, 1 case Can Openers, 4 dozen Churns.

By **The F. B. Wheeler Company**.—1 case Hardware, 9 crates Stoves.

By **Arkell & Douglas**.—3 dozen Parers, 2 gross Hardware.

By **McLean Bros. & Rigby**.—27 Meat Choppers, 20 Pumps, 2000 pounds Horse Nails, 2 Drills, 68 dozen Saws, 4 dozen Hammers, 1 case Harness Menders, 1 case Spoke Shaves, 1 Drill.

By **Meriden Britannia Company**.—4 packages Plated Ware.

By **R. W. Forbes & Son**.—90 packages Onkum, 10 dozen Tools, 20 packages Hardware, 6 packages Pumps, 17 packages Hardware.

FOR LYTTLETON.

By **R. W. Cameron & Co.**—9 dozen Axes, 5 packages Hardware, 112 pounds Tacks, 1 dozen Stencils, 3 dozen Snaths, 1 bale Rubber Packing, 42 Churns, 6 Store Trucks.

By **R. W. Forbes & Son**.—1 case Agricultural Implements.

PER BARK DOUGLAS, JULY 20, 1891, FOR EAST LONDON, SOUTH AFRICA.

By **Arkell & Douglas**.—11 cases Plows and parts.

By **Coombs, Crosby & Eddy**.—5 dozen Wrenches, 4 dozen Axes.

By **W. H. Crossman & Bro.**—2 cases Agricultural Hardware, 392 cases Agricultural Implements and parts, 4 packages Carriage Hardware, 282 cases Agricultural Implements and parts, 9 cases Agricultural Implements and parts, 14 packages Agricultural Implements and parts.



PER BARK LOTTIE MOORE, JULY 21, 1891,  
FOR DUNEDIN, NEW ZEALAND.

By William Lunham.—11 packages Hardware.  
By W. K. Freeman.—440 pounds Axes, 4 crates Churns.  
By R. W. Forbes & Son.—2 barrels Wire, 3 cases Axes and Handles.  
By Alfred Field & Co.—4 dozen Hatchets, 1 case Silver-Plated Ware, 3 crates Churns.  
By The F. B. Wheeler Company.—1 case Hardware, 3 cases Fire Arms, 2 racks Churns, 1 case Hardware.  
By W. H. Crossman & Bro.—1 dozen Pumps, 3 dozen Hatchets, 5 cases Hardware, 1/2 dozen Meat Choppers, 8 packages Lamp Goods.  
By H. W. Peabody & Co.—8 packages Hardware, 4 cases Axes, 1 case Tacks, 2 dozen Air Rifles, 1 case Lamp Goods, 111 packages Agricultural Machinery, 6 packages Lampware, 2 1/2 dozen Axes, 1 case Hardware, 1 case Plated Ware, 7 packages Lampware, 3 dozen Egg Beaters, 1 case Pumps, 18 gross Oilers, 1 bundle Sash Cord, 7 packages Hardware, 6 racks Churns, 1 dozen Scoops, 1 case Traps, 3 cases Hardware, 2 cases Agate Ware, 2 cases Axes.

FOR WELLINGTON.

By McLean Bros. & Rigg.—1 gross Harness Menders, 12 dozen Hammers, 10 dozen Axes, 425 pounds Horse Nails, 28 sets Axes, 60 dozen Lamps, 36 pieces Plated Ware, 8 dozen Axes, 3 dozen Curry Combs.  
By F. H. Lovell & Co.—13 cases Lamp Goods.  
By the F. B. Wheeler Company.—1 case Hardware, 1 case Bird Cages, 1 case Hardware, 2 cases Wringers, 3 cases Saws, 4 cases Hardware, 1 case Hammers.  
By Alfred Field & Co.—45 Stoves.  
By S. Hoffnung & Co.—12 gross Tinware, 36 gross Rules.  
By R. W. Forbes & Son.—9 packages Hardware, 16 cases Axes and Hammers, 1 case Britannia Ware.  
By H. W. Peabody & Co.—2 dozen Picks, 12 dozen Hammers, 13 dozen Axes and Hatchets, 5 dozen Axes, 24 packages and 2 cases Hardware, 3 dozen Wringers, 12 bundles Step Ladders, 9 cases Hardware, 2 dozen Lemon Squeezers, 17 packages Hardware, 2 cases Traps, 1 case Plated Ware, 2 dozen Wringers, 950 pounds Horse Nails, 4 dozen Hoes, 3 cases Bird Cages, 3 cases Saws, 7 packages Hardware, 1/2 dozen Wringers, 24 packages Hardware, 80 kegs Nails, 18 cases Edge Tools, 1 case Mills, 18 cases Hardware, 2 1/2 dozen Wringers, 10 dozen Shovels, 28 dozen Tools, 2 dozen Churns, 14 Churns, 16 cases Hardware, 50 kegs Nails, 16 packages Hardware, 1 dozen Wringers, 7 crates Stoves, 24 dozen Shovels, 1 case Hardware.

PER BARK FLORA, JULY 31, 1891, FOR  
WELLINGTON, NEW ZEALAND.

By the Goulds Mfg. Company.—81 Pumps.  
By Collins & Co.—16 dozen Picks.  
By W. & B. Douglas.—2 boxes Pumps.  
By F. B. Wheeler Company.—4 cases Hardware.  
By Edward Miller & Co.—40 packages Lamp Ware.  
By F. H. Lovell & Co.—600 pounds Money Tills, 520 pounds Lamp Goods.  
By W. H. Crossman & Bro.—16 dozen Hammers, 2 cases Hardware.  
By Jos. F. McCoy Company.—1 case and 6 packages Lamps.  
By Arkell & Douglas.—500 pounds Nails, 6 dozen Axes, 16 dozen Wringers, 50 pounds Cordage, 8 sets Axes, 10,000 Bolts.  
By McLean Bros. & Rigg.—6 dozen Axes, 10 cases Nails, 3 cases Wringers, 8 dozen Mattocks, 3 cases Oil Stones, 35 pounds Carriage Hardware, 1775 pounds Nails, 6 dozen Fly Traps, 1/2 dozen Mangles, 2 dozen Picks, 17 Planes, 2 1/2 dozen Wringers, 1 case Stone, 2 dozen Locks, 217 pounds Carriage Hardware.  
By R. W. Forbes & Son.—16 dozen Axes, 6 dozen Hammers, 24 Pumps, 30 boxes Nails, 8 Pumps, 1 case Plated Ware, 6 packages Hardware, 3 dozen Wringers, 7 packages Hardware, 21 dozen Tools, 56 boxes Nails, 2 cases and 1 box Plated Ware, 6 1/2 dozen Wringers, 15 dozen Hammers, 24 dozen Axes, 6 Scales, 24 packages Hardware, 6 dozen Bush Hooks, 25 dozen Axes, 104 boxes Nails, 60 dozen Tools, 2 dozen Scales, 2 1/2 dozen Wringers, 15 Lawn Mowers, 1 dozen Carpet Sweepers, 4 packages Carriage Hardware, 13 packages Builders' Hardware, 112 boxes Nails, 6 Lawn Mowers, 29 Lawn Mowers, 18 packages Stoves, 34 1/2 dozen Tools, 5 1/2 dozen Wringers, 76 packages Hardware, 9 packages Wringers, 2200 Carriage Bolts, 48 boxes Horse Nails, 23 pieces Hardware, 19 packages Hardware.  
By H. W. Peabody & Co.—105 cases and 3 bundles Agricultural Machinery, 1 case Man gles, 1 case Wringers, 1 case Hardware, 1 case Pumps, 1 case Axes, 1 case Traps, 1

case Lamp Goods, 1 box Hatchets, 1 case Cages, 1 case Hardware, 5 boxes Wringers, 2 cases Wringers, 3 cases Nails, 4 crates Stoves, 1 case Cages, 4 cases Hardware, 5 packages Lamp Goods, 40 kegs Nails, 1 bale Cordage, 1 case Hardware, 1 case Rakes, 60 cases Cartridges, 1 case Hardware, 8 cases Saws, 35 packages Axes, 4 cases Nails, 2 packages Scales, 11 packages Pumps, 44 cases Lawn Mowers, 10 cases Wringers, 1 crate Choppers, 4 cases Hardware, 60 cases Axes, 1 case Mangles, 1 case Hardware, 4 boxes and 3 barrels Lampware.

FOR AUCKLAND.

By H. W. Peabody & Co.—120 packages Agricultural Machinery, 1 case Rules, 1 case Saws and Files, 1 case Cork Pullers, 22 packages Agricultural Hardware, 1 case Rat Traps, 8 packages Hardware.  
By W. H. Crossman & Bro.—19 packages Lamp Goods, 2 dozen Cork Pullers.  
By the F. B. Wheeler Company.—1 case Hardware.  
By McLean Bros. & Rigg.—1 dozen Drills.

## Paints and Colors.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

With respect to the general trade movement there is nothing of striking interest to report for the past week. Orders for some lines of staple goods and specialties have been placed to a slightly more liberal extent by visiting buyers from some of the more remote sections, and traveling salesmen have made very fair returns also. With due allowance for the drawbacks incidental to the season it is obvious that engagements in anticipation of fall season requirements have been rather backward thus far, and purchases of base materials used by grinders have also been on a moderate scale. There are indications of a turn for the better in the Linseed Oil market, and the course of prices for Pig Lead has been toward a higher level also. This relieves a certain degree of uncertainty that has prevailed for several weeks, and it is now considered doubtful that prices for the various productions into which those commodities enter as a prominent ingredient will undergo any further modification.

**White Lead.**—Enhanced cost of crude material and indications that the advance will be maintained serve to impart a decidedly firm undertone to the market, but jobbers are putting in only such supplies as their requirements necessitate, and the purchases by retailers and painters are of merely fair seasonable average. Prices for pure pigment from first hands are unchanged. Concessions by jobbers are not uncommon, but in this line there is nothing going on that contrasts with the general rule of late. Mixed Leads are without change, and there is nothing in the position of dry White Lead, Oil, or other ingredients suggestive of any radical movement in the immediate future.

**Zincs.**—In the market for American Oxide there has been no change of importance. Large consumers are placing few orders, as the outlet for their products is momentarily light, and the distribution by jobbers is of moderate volume. The accumulation of supplies in first hands is comparatively small, however, and as there is no friction between manufacturers, prices are firmly held. Foreign brands are without change in price, although rather slow of sale for the time being.

**Colors.**—In the market for dry Colors there is no distinctively new feature. Lower prices for Quicksilver cause some speculation as to prices for Quicksilver Vermilion, in view of the fact that outside brands have been selling considerably under the association rates, but the latter appear to be adhered to by the manufacturers within the combine, and the difference in price is alleged to be only in keep-

ing with the difference in quality. Otherwise nothing comes to the surface that would have any direct bearing upon values, and there is little or no fluctuation in values beyond what may properly be termed commonplace. Insecticides move very slowly, and the moderate business passing is at somewhat variable prices.

**Miscellaneous.**—For Block Chalk that may come in unsold the outlet is narrow, and lots ex-vessel would not bring over \$1.00 @ \$2. Ordinary jobbing lots in barrels sell at old prices. Whiting and Paris White move off very fairly on old contracts at former prices, but new orders are moderate. China Clay, Talc, Terra Alba and Barytes are without important change in value and move rather slowly.

## Oils and Turpentine.

In the general situation there is nothing really new to report aside from a turn for the better in the Linseed Oil market, due to modification of aggressive action by Western crushers. Other Oils have been free from disturbing influences, and, in the absence of anything more than merely routine summer season demand, prices have remained almost stationary.

**Linseed Oil.**—The indications of improvement in the market for this commodity, to which reference was made last week, are more pronounced, and it would now appear that independent Western crushers are much less belligerent. In any event offers of the outside brands at 37¢ appear to have been withdrawn and the amount of stock on sale at 38¢ is by no means heavy. Whether this is the result of a temporary truce remains to be seen, but it is the fact that a more cheerful spirit is displayed by local crushers. The latter hold to the prices for their product that have ruled during the past two weeks.

**Cotton-Seed Oil.**—Crude product has been sold in small parcels at 27¢ @ 28¢ for off grade and 30¢ for prime quality, indicating a fairly steady market in the face of disinclination of buyers to contract for prime new crop at over 28¢. Refined has been selling in small lots to a very fair extent, chiefly at 33¢ @ 34 1/2¢ for off-grade Yellow, and 39¢ @ 40¢ from better quality. Large buyers manifest very indifferent interest, however, and take the ground that there will be quite enough stock to go around in view of the fact that exporters are buying very moderately.

**Menhaden Oil.**—There have been no new developments. The catch of fish in all quarters is represented as having been very moderate thus far this month, and, fortified by bids of 28¢ from the home trade, the combination not only stand out for 30¢, but place a limit upon the quantity they will venture to sell at that price. For the Pressed and Bleached product the demand has improved somewhat and prices are very firm at the advance quoted last week, with the tendency upward.

**Lard Oil.**—The demand has run somewhat irregular, but a slight improvement is noted for the week and prices show little change.

**Miscellaneous.**—Olive Oil is lower under the influence of reports of large crop of Olives, spot parcels selling at 60¢ @ 62¢, while as low as 58¢ is quoted on large lots to arrive. Ceylon Coconut Oil is also rather weak at 6 1/2¢ @ 7¢ on spot, and 6 1/4¢ for stock to arrive by next ship. Palm and Red Oils are without change.

**Spirits Turpentine.**—Prices have turned somewhat for the better, under the influence of better movement at Southern ports. The local demand is moderate, but spot stock is quite firmly held at 36¢ for regular and 36 1/2¢ for machine barrels.

George D. Burton, who is developing electric heating and forging of iron and steel at Boston, has exhibited lately a machine for forming an auger screw.

### Alaska Specialties.

Troy Nickel Works, Troy, N. Y., are introducing some specialties, as illustrated in Figs. 1 and 2. The stove lid lifter, as shown in Fig. 1, has a peculiarly shaped

barrow is pushed produces a mist-like flow of powder that settles on two rows of vines at the same time. The quantity of powder deposited is regulated by the speed at which the operator walks. The cans containing the powder may be moved

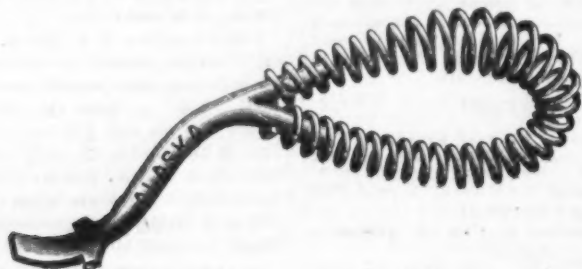


Fig. 1.—Alaska Stove Lid Lifter No. 2.

handle, which is referred to as giving a good grasp for the hand, without any possibility of burning the fingers. This is made with tip to fit any stove lid. The stand shown in Fig. 2 is of effective design, and is accompanied by poker, shovel

inward or outward to meet the requirements as to the distance between the rows. The arm and frame holding the cans may be raised or lowered to suit the height of the vines, and by a pressure of the hand the powder can be distributed in a contin

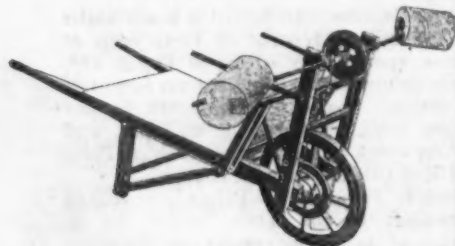


Fig. 2.—Alaska Fire Set No. 5.

and tongs, all provided with Alaska handles.

### Cyclone Paris Green Applier and Fertilizer Distributor.

Patent Development Company, 35 Warren street, New York, are offering the trade a distributor for Paris green and fer



Cyclone Paris Green Applier and Fertilizer Distributor.

tilizers, as illustrated herewith. This consists of perforated cans fastened to a revolving shaft on a frame; the rotary movement imparted to the cans when the

uous shower, or on hills at a distance apart. Cans or cylinders of different sizes and shapes are furnished to deposit the powder in rows, drills or broadcast. The frame can be taken from the barrow by removing the pin at the lower end of each upright, which holds it to the axle of the barrow wheel, after which the barrow may be used for other purposes. This distributor is furnished with or without the barrows as desired.

### Milk and Butter Refrigerator No. 30.

Grand Rapids Refrigerator Company, Grand Rapids, Mich., are introducing a milk and butter refrigerator, No. 30, as illustrated herewith. Fig. 1 shows the external appearance, while Fig. 2 gives a view of the interior of the refrigerator. In the latter view the letters A and B represent the can for cream and milk, made of IXX tin. C is a galvanized iron tank for ice and water surrounding the milk can. D is a graduated glass test tube for determining the percentage of cream in the milk. F is the chamber for the storage of butter. E is a flue in the corner for the descent of cold air from the outside of the

ice-water tank to the butter chamber below. G is the flue for the ascent of the warmer air, to complete the circulation. H is a large nickel-plated cream faucet through which the milk is first drawn, and afterward the cream. This is a combination of a refrigerator for butter and a creamer for preserving milk by the deep setting process, by the use of which, it is claimed, milk can be kept sweet several



Fig. 1.—Milk and Butter Refrigerator No. 30.

weeks, or as long as there is ice in the water. It is stated that by its use the quantity of cream will be greatly increased. Five or six pounds of ice are required night and morning, and it is necessary to clean the milk can once a week. In testing the milk, the test tube is filled to the highest point and suspended in the ice water. Each mark is 1-100 of the whole, and reads from the top down. The percentage of cream shows for itself after 8 or 12 hours; for instance, cream down to the twentieth line is 20 per cent., &c. The tin can will hold 8 quarts of milk.

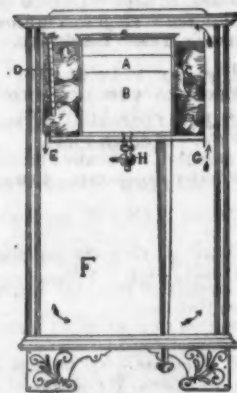


Fig. 2.—Detailed View of No. 30 Refrigerator.

The refrigerator case is made of ash, hand carved, antique finish, double walls, with double thick wool felt and zinc lined throughout. They are made of but one size, 22½ inches long, 21 inches deep and 39 inches high. They are particularly designed for the care of milk and butter in cities.

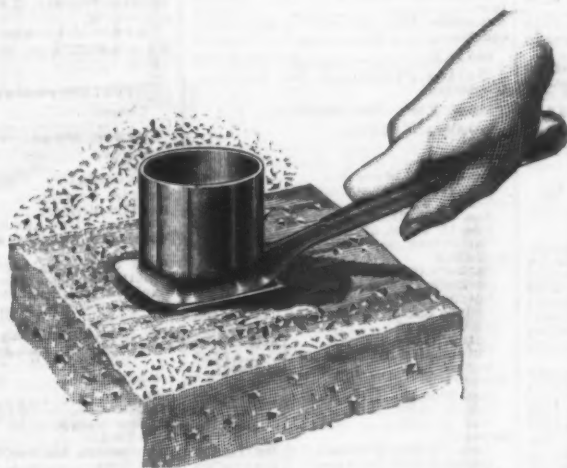
E. T. Barnum, manufacturer of Art Wire and Iron Work, Detroit, Mich., calls attention in a published article commenting on a recent tour in Europe to the immense amount of ornamental iron work used there in place of wood, and such is the education of foreign artisans, owing to their artistic surroundings, that they make this work of superior merit from an artistic standpoint. Wood is scarce there and much more attention is paid to durability than in our country. But Mr. Barnum



calls attention to the wonderful increase of the use of metal in building in the United States during the last decade, in the substitution for wood, such as stairways, roof and tower ornaments, and balconies and stable fixtures, as well as for the more structural usages, and to the characteristic way the Yankee is borrowing artistic points from his foreign brother and improving on them.

### The Diamond Ice Shaver.

Chas. B. Stevens, 427 Boston Block, Minneapolis, Minn., are offering the trade an ice shaver, as illustrated herewith. This consists of a handle and cup of brass, cast in one piece. To the under side of the cup is attached by screws a steel shaving blade. By shoving the shaver over a cake

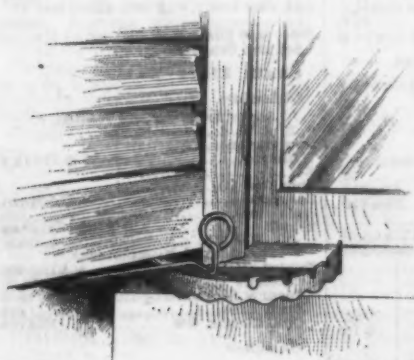


The Diamond Ice Shaver.

of ice the shaved particles of ice are collected in the cup, and from there are emptied into a glass or other receptacle. The manufacturers claim that by its use a saving in ice is effected; that the fingers are not affected, as it is unnecessary to touch the ice, and that it shaves the ice, not clipping or breaking it. The shaver is designed for use in the household, restaurant, and at soda fountains.

### White's Window Blind Fastening.

Galen, Orr & Co., Needham, Mass., are offering the trade a blind fastening, as illustrated herewith. It consists of a semi-



White's Window Blind Fastening.

circular iron casting, with six notches to receive a spring catch. The casting is secured to the window sill, and the spring catch fastened to the under portion of the blind. The fastening admits of the blind being opened to admit light and air, at the same time excluding the direct rays of the sun. The fastening is simple, and can be put on either old or new buildings in a short time.

### Cost of Making Tin Plates in Wales.

The recent stoppage of the Welsh tin plate works was opposed by many in the trade on the ground that plates could be made with profit at prices lower than those prevailing when the shut down occurred, and that, therefore, the works should be run for the benefit of the men, it being also urged that by keeping the market at the lowest possible point there would be less inducement to start American mills. In a letter on the subject, published in a local Welsh paper, D. R. Jenkins presents the following analysis of the cost of making tin plates that may be of interest to a number of our readers.

Now to prove that all above 12s. 6d. is profit to the manufacturer. The basis of

our facts and figures is a IC (common) 14 x 20 inch box, coke finish, 112 sheets, 108 pounds net. In your issue of May 20 the price for tin is given as £92 12s. 6d. per ton; Bessemer bars, £5 2s. 6d. per ton; coal, through, 12s. 6d. per ton; rubbly, 6s. 6d.; small, 5s. 6d. per ton, and Bessemer tin plates, 15s. per box. And it is with these facts and those other facts known to me as an "insider" that my figures shall be substantiated. Of the above steel bars a ton will make 16½ boxes of tin plates. The manufacturer has returned to him out of this 3½ cwt. in shearings, which will realize 9s. I proceed to show the different heads of cost—viz.:

	£	s.	d.
Steel bars for 16½ boxes, £2 2s. 6d. per ton, less 9s. shearing.....	4	13	6
Rolling.....	0	4	6
Doubling.....	0	3	8
Furnacing.....	0	3	1
Behinding.....	0	1	8
Shearing and bundling.....	0	1	8
Opening.....	0	1	0
Cold rolling.....	0	1	0
Annealing.....	0	1	6
Pickling.....	0	1	8
Tinning.....	0	4	0
Washing.....	0	4	0
Rising.....	0	1	2
Rubbing and dusting.....	0	1	10
Assorting, boxing and cover drying	0	2	6
Tin, £92 12s. 6d. (10d. per pound); coke-finished sheets (112), 2½ pounds per box—16½ boxes.....	1	14	4½
And an allowance for scruff and oxide.....	0	1	0
Coal, small and through, 5s. 6d. to 12s. 6d. per ton.....	0	6	6
Acid, per ton at £5.....	0	6	0
Palm oil, at 5d. per pound.....	6	6	0
Wood boxes (elm sides), 4½d. to 4½d. each.....	0	6	0½
Bran (?) and stores.....	0	2	6
Annealing pots.....	0	1	4
Castings, &c., in the different departments.....	0	3	0
Management and clerks.....	0	2	0
Other labor and trade expenses.....	0	6	0
Rates, taxes and bank charges.....	0	3	2

16½ boxes Bessemer tin plates £10 5 2  
1 box Bessemer tin plates..... 0 12 9

Hence, per box, 15s. for Bessemer coke-finish tin plates means 2s. 6d. profit. To quote Mr. Phillips, Llanelly (vide *South Wales Daily News*, May 20):

Boxes.

The estimated make of 471 mills for 26 weeks is..... 7,053,696  
Less allowance for holidays..... 477,621  
Make in 25 weeks..... 6,576,084

The number of boxes at a profit of 2s. 6d. per box represents an aggregate profit in 20 weeks to 820 manufacturers £822,010 10s. We are told, Mr. Editor, that the above-mentioned 471 mills are owned by about 80 firms, or about 320 shareholders. A tin-plate works plant with three mills costs £10,000. There are large dividends paid. That is evident. A works near Baglan last year paid nearly 50 per cent., and one near the Loughor River over 43 per cent. Plates have been changing hands at even 12s. 9d. per box, and should sell at that again if the American is to be deterred from making tin-plates. It is well to pause and consider. Think you not that well should be left alone, and the works, if only "a threepenny-piece" profit per box can be made, should be kept going? The times of great profits on this commodity, tin and terne plates, is a thing of the past. But is not the above £822,010 profit in 26 weeks satisfactory?

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# CURRENT HARDWARE PRICES.

AUGUST 12, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Adjusters, Blind.

Domestic..... \$ dos \$3.00, 35¢  
 Peter Wright's..... \$ dos \$10.00, 50¢  
 Washburn's Self-Locking..... 20¢  
 Washburn's Self-Locking..... 20¢

Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils.

Eagle Anvil, 10¢..... 15¢  
 Peter Wright's..... 11¢  
 Armistage's Mouse Hole..... 10¢  
 Armistage's Mouse Hole, Extra..... 12¢  
 Trenton..... 10¢  
 Wilkinson's..... 10¢  
 Moore & Barnes Mfg. Co..... 35¢

## Awl Vise and Drill—

Miller Falls Co., 10¢..... 20¢  
 Cheney Anvil and Vise..... 25¢  
 Allen Anvil and Vise..... 40¢  
 Star..... 45¢

Apple Parers—See Parers, Apple, &c.

## Augers and Bits—

Douglas Mfg. Co..... 70¢  
 Wm. A. Ives & Co..... 70¢  
 Humphreysville Mfg. Co..... 70¢  
 French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)..... 70¢  
 Rockford Bit Company..... 70¢  
 Cook's, Douglas Mfg. Co..... 55¢  
 Cook's, N. H. Copper Co. 50¢  
 Ives' Circular Lip..... 60¢  
 Patent Solid Head..... 20¢  
 C. E. Jennings & Co., No. 10, extension 40¢  
 C. E. Jennings & Co., No. 30..... 40¢  
 C. E. Jennings & Co., Auger Bits, set, 33¢  
 Lewis' Patent Single Twist..... 45¢  
 Russell Jennings' Augers and Bits..... 35¢  
 Imitation Jennings' Bits..... 40¢  
 Snell's Jennings Pattern..... 60¢  
 Pugh's Black..... 20¢  
 Rockford, Jennings' Pattern..... 60¢  
 Car Bits..... 60¢  
 Car Bits, P. S. & W. Co..... 60¢  
 Snell's Car Bits..... 60¢  
 L. Hommedieu Car Bits..... 60¢  
 Forster's Pat. Auger Bits..... 20¢  
 Cincinnati Bell-Ringers' Bits..... 20¢

## Bit Stock Drills—

Moore Twist Drills..... 50¢  
 Standard..... 50¢  
 Cleveland..... 50¢  
 Syracuse, for metal..... 50¢  
 Syracuse, for wood (wood list)..... 30¢  
 Williams' or Holt's, for metal..... 40¢  
 Williams' or Holt's, for wood..... 40¢  
 Cincinnati, for wood..... 40¢  
 Cincinnati, for metal..... 45¢

## Expansive Bits—

Clark's small, 15¢; large, 20¢, 35¢  
 Ives' No. 1, 10¢; No. 2, 15¢  
 Swan's..... 40¢  
 Stearns, No. 1, 10¢; No. 2, 15¢  
 Stearns, No. 2, 15¢  
 Common..... 70¢  
 Diamond..... 70¢  
 See..... 70¢  
 "Whale Cut, Richardson's"..... 40¢  
 Double Cut, Ct. Valley Mfg. Co..... 30¢  
 Double Cut, Hartwell's, 7¢  
 Double Cut, Douglas's..... 40¢  
 Double Cut, Ives..... 60¢

## Hollow Augers—

French, Swift & Co..... 35¢  
 Douglas's..... 35¢  
 Bonney's Adjustable..... 40¢  
 Stearns..... 30¢  
 Ives' Expansive, each \$4.50..... 50¢  
 Universal Expansive, each \$4.50..... 30¢  
 Wood's..... 25¢  
 Cincinnati Adjustable..... 55¢  
 Cincinnati Standard..... 55¢  
 L'Hommedieu's..... 15¢  
 Vatro's..... 15¢  
 Snell's..... 15¢  
 Snell's Ship Auger Pat'n Car Bits..... 15¢

## Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c.—  
 Awls, Sewing, Common..... \$ gr \$1.70, 45¢  
 Awls, Should. Peg, 7¢..... 50¢  
 Awls, Pat. Peg, 7¢..... 50¢  
 Awls, Shouldered Brad, 2.70 gr..... 35¢  
 Awls, Handled Brad, 2.70 gr..... 45¢  
 Awls, Handled Scratch, 7¢..... 55¢  
 Awls, Socket Scratch, 7¢..... 55¢

## Awl and Tool Sets—See Sets, Awl and Tool.

First quality, best brands, 7¢..... \$ gr \$7.50  
 First qual., other brands..... 6.25¢  
 Second quality..... 6.00¢  
 Axle Grease—See Grease, Axle.

## Axles—

No. 1, 15¢; No. 2, 10¢  
 No. 7 to 14..... 55¢  
 No. 15 to 22..... 70¢  
 No. 19 to 22..... 70¢  
 Concord Axles, loose collar..... 50¢  
 Concord Axles, solid collar..... 60¢  
 National Tubular Self-Oiling..... 35¢

## Bag Holders—See Holders, Bag.

Balances—  
 Spring Balances..... 40¢  
 Chatillon, No. 200, 30 gr..... 1.75¢  
 Chatillon, No. 200, 0.95 1.75 net  
 Chatillon, Straight Balances..... 40¢  
 Chatillon Circular Balances..... 50¢

## Bars.

Cast Steel..... \$ 3¢  
 Iron, Steel Points..... \$ 3¢  
 Basins, Wash—  
 Standard Fiberware, No. 1, 10½-inch, 25¢  
 12-inch, 25¢; 13½-inch, 25¢; 16-inch, 25¢

## Beams, Scale—

Scale Beams, List Jan. 12, '83..... 50¢  
 Chatillon's No. 1..... 40¢  
 Chatillon's No. 2..... 50¢  
 Custer's..... 35¢

## Beaters—

Dover..... \$ dos \$1.50  
 Duplex (Standard Co.)..... \$ dos \$1.00  
 Duplex Extra Heavy (Standard Co.)..... \$ dos \$1.50

Bryan's..... \$ gro \$4.00  
 Double (H. & R. Mfg. Co.)..... \$ gro \$4.00  
 Kasy (H. & R. Mfg. Co.)..... \$ gro \$12.00  
 Triple (H. & R. Mfg. Co.)..... \$ gro \$16.00  
 Spiral..... \$ gro \$4.25 @ 4.50

Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00  
 Paine, Diehl & Co.'s..... \$ gro \$24.00  
 Silver & Co..... \$ dos \$5.50

## Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1; No. 2, \$2..... 30¢  
 Common Wrought..... 60¢  
 Western..... 30¢  
 Western, Sargent's list..... 70¢  
 Kentucky, "Star"..... 30¢  
 Kentucky, Sargent's list..... 70¢  
 Kentucky Durham..... 70¢  
 Dodge, Genuine Kentucky..... 70¢  
 Texas Star..... 50¢

## Doors—

Gong, Abbe's..... 25¢  
 Gong, Yankee..... 45¢  
 Gong, Barton's..... 25¢  
 Gong, Taylor's..... 25¢  
 Gong, Brooks'..... 50¢  
 Gong, Cone's..... 10¢  
 Gong, Connel's..... 30¢  
 Gong, Sargent's..... 60¢  
 Gong, Taylor's Bronzed or Plated..... net  
 Gong, Taylor's Japanese..... 25¢  
 Gong, R. E. M. Co.'s..... 50¢  
 Pull, Brook's..... 50¢  
 Pull, Western..... 25¢

## Electric—

Wollensak's..... 20¢  
 Bigelow & Downe..... 20¢  
 Taylor's..... 20¢

## Hand—

Light Brass..... 75¢  
 Extra Heavy..... 65¢  
 White Metal..... 60¢  
 Silver Chime..... 35¢  
 Globe Patent..... 35¢

## Miscellaneous—

Call..... 40¢  
 Farm Bells..... 7¢  
 Steel Alloy Church and School Bells..... 40¢  
 Bellows—  
 Blacksmith's..... 60¢  
 Molders..... 40¢  
 Hand..... 60¢

## Belting, Rubber—

Common Standard..... 70¢  
 Standard..... 70¢  
 Extra..... 60¢  
 N.Y.B. & P. Co., Carbon..... 60¢  
 N.Y.B. & P. Co., Diamond..... 60¢  
 N.Y.B. & P. Co., Para..... 60¢

## Bench Stops—See Stops, Bench.

## Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..... 15¢  
 Stoddard's Perfect Tire Bender..... 15¢

## Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

## Bit Holders—See Holders, Bit.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks—

Ordinary Tackle, list May 20, 1889..... 70¢  
 Moore's Novelty, Mal. Iron..... 50¢  
 Sure Grip Steel Tackle Blocks..... 25¢

## Boards, Stove.

Wood Lined "Crystal"..... \$ See Trade Report.  
 "Oxidized"..... \$  
 Paper Lined Zinc..... \$  
 "Crystal"..... \$  
 "Embossed"..... \$  
 "Oxidized"..... \$

## Belts—

Carriage, Machine, &c..... 75¢  
 Com. list June 10, '84..... 75¢  
 Genuine Eagle, list Oct. '84..... 80¢  
 Phila. pattern, list Oct. '84..... 80¢  
 R.B. & W., old list..... 70¢  
 Machine, list Jan. 1, 1890..... 75¢

## Bolt Ends, list Jan. 1, 1890.

75¢  
 Bolt Ends, list Jan. 1, 1890..... 75¢

## Door and Shutter—

Cast Iron Barrel, Square, &c..... 70¢  
 Cast Iron Shutter Bolts..... 70¢  
 Cast Iron Chain (Sargent's list)..... 65¢  
 Ives' Patent Door Bolt..... 60¢  
 Wrought Barrel..... 70¢  
 Wrought Square..... 70¢  
 Wrt Shutter, all Iron, Stanley's..... 60¢  
 Wrt Shutter, Brass Knob..... 40¢  
 Wrt Shutter, Sargent's list..... 60¢  
 Wrt Sunk Flush, Sargent's list..... 55¢  
 Wrt Sunk Flush, Stanley's list..... 55¢  
 Wrt B.E. Flush, Com'n..... 55¢

## Stove and Flow—

Stove..... 60¢  
 Flow..... 60¢  
 R. B. & W., Flow..... 55¢

## Tire—

Common, list Feb. 23, '83..... 65¢  
 Port Chester Bolt and Nut Company..... 65¢  
 Empire, list Feb. 23, '83..... 65¢  
 Keystone, Philadel., list Oct. '84..... 80¢  
 Norway, Phila., list Oct. '84..... 75¢  
 American Screw Company..... 75¢  
 Norway, Phila., list Oct. 16, '84..... 80¢  
 Eagle, Phila., list Oct. 16, '84..... 80¢  
 Philadel., list Oct. 16, '84..... 80¢  
 Bay State, list Feb. 23, '83..... 85¢  
 R.B. & W., Philadel., list Oct. 16, '84..... 80¢

## Borers, Tap.

Common and Kind..... 20¢  
 Ives' Tap Borers..... 35¢  
 Enterprise Mfg. Co..... 30¢  
 Clark's..... 35¢

## Borax.

Boring Machines—See Machines, Boring.

## Bow Pins—See Pins, Bow.

## Boxes, Wagon.

Per D..... 25¢

## Braces—

American Bit Brace Co.:  
 Nos. 10, 12, 20..... 80¢  
 Nos. 11, 21, 24, 27..... 70¢  
 Nos. 22, 23, 25..... 60¢  
 Nos. 13, 26, 35, 37..... 70¢  
 Ball Braces, net..... \$1.15 to \$1.50

## Amidon's

Barker's Imp'd Plain..... 75¢  
 Barker's Imp. Nickleled..... 65¢  
 Barker's Imp. Nickel..... 65¢  
 Eclipse Ratchet..... 60¢  
 Globe Jawed..... 40¢  
 Corner Black..... 40¢  
 Universal, 8 in., \$2.10 10 in., \$2.25  
 Buffalo Ball..... \$1.10 @ \$1.15

## Barber's

Nos. 10 to 16..... 60¢  
 Nos. 30 to 33..... 60¢  
 Nos. 40 to 63..... 60¢

## Saxton's

Imp. Polished..... 75¢  
 Barker's Imp. Nickel..... 65¢  
 Barker's Imp. Nickel..... 65¢  
 Ratchet, Polished..... 60¢  
 Ratchet, Nickel..... 40¢  
 Buffalo Ball..... net, \$1.10 @ \$1.15  
 Bartholomew's..... 50¢  
 Nos. 25, 27 and 30..... 50¢  
 Nos. 37, 115, 119..... 70¢  
 Common Ball, American..... \$1.00 @ \$1.10  
 Fray's Genuine Spofford's..... 50¢  
 Fray's No. 70 to 120, 81 to 123, 307 to 414..... 60¢

## Ives' New Haven Novelty.

New Haven Ratchet..... 60¢  
 Barker's Ratchet..... 60¢  
 Barber's..... 60¢  
 Spofford..... 60¢  
 Spofford's Ratchet..... 40¢  
 P. S. & W. Co., Peck's Patent..... 60¢

## Brackets—

Shelf plain, Sargent list, 55¢  
 Shelf, fancy, Sargent's list, 60¢  
 Shelf, plain..... 50¢  
 Reading, Rosette..... 60¢

## Bright Wire Goods—See Wire.

## Broilers—

Hen's Self-1 inch..... 9 10 9x11  
 Basting, 1 Per dos..... \$4.50 5.50 6.50  
 New Haven..... 50¢  
 Wire Goods Co..... 65¢

## Buckets, Well.

Hill's..... \$ dos, 12 qt, \$4.25; 14 qt, \$5.10  
 Iron Clad..... \$ dos, 14 qt, \$4.25 @ \$4.50  
 Helwig's Flat Iron Band..... \$3.75  
 Helwig's Wired Top..... \$ dos \$4.00

## Bull Rings—See Rings, Bull.

## Butchers' Cleavers—See Cleavers, Butchers'.

## Butts—

Wrought Brass..... 75¢  
 Cast Brass, Tiebout's..... 60¢  
 Cast Brass, Corbin's, Fast..... 35¢  
 Cast Brass, Loose Joint..... 35¢

## Cast Iron—

Fast Joint, Narrow..... 50¢  
 Fast Joint, Broad..... 50¢  
 Loose Joint, Broad..... 70¢  
 Loose Joint, Japanned..... 70¢  
 Loose Joint, Jap. with Acorns..... 70¢  
 Loose Joint, Butts..... 70¢  
 Loose Pin, Acorns, Japanned..... 70¢  
 Loose Pin, Acorns, Japanned..... 70¢  
 Loose Pin, Acorns, Japanned..... 70¢

## Wrought Steel—

Fast Joint, Narrow..... 50¢  
 Fast Joint, Broad..... 50¢  
 Loose Joint, Broad..... 70¢  
 Loose Joint, Broad..... 70¢  
 Loose Joint, Broad..... 70¢

## Callipers—See Compasses.

## Calks, Tee—

Gautier, One Prong, Blunt..... 5¢  
 Gautier, One Prong, Blunt..... 5¢  
 Gautier, Two Prong, Blunt..... 7¢  
 Gautier, One Prong, Sharp..... 5¢

## Can Openers—See Openers, Can.

## Caps—

Perfection, 1000—  
 Hicks & Goldmark's and Union Metallic Cartridge Co.  
 F. L. Waterproof, 1-10's..... 35¢  
 E. B. Trimm Edge, 1-10's..... 47¢  
 E. B. Grad. Edge, Cent. Fire, 1-10's..... 47¢

Musket Waterproof, 1-10's..... 47¢  
 S. D. 50¢  
 S. B. Genuine Imported..... 37¢  
 Eley's E. B..... 50¢  
 Eley's D Waterproof, Central Fire..... \$1.00

## Primers—

Serdan Primers, \$1.00..... 25¢  
 S. L. Caps (for Sturtevant Shells) \$1.00..... 25¢  
 All other Primers, \$1.30..... 25¢

## Cards—List January 23, 1891.

Watson's Cotton, Wool, Horse and File..... 25¢

## Carpet Stretchers—See Stretchers, Carpet.

## Carpet Sweepers—See Sweepers, Carpet.

## Cartridges—

Blank Cartridges..... 50¢  
 Blank Cartridges..... 50¢  
 Blank Cartridges..... 50¢  
 Blank Cartridges..... 50¢  
 Blank Cartridges..... 50¢

## Blank Cartridges, except 22 and 32 cal., additional 10¢ on above discounts.

Blank Cartridges, 22 cal., \$1.75..... 25¢  
 Blank Cartridges, 32 cal., \$3.50..... 25¢  
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Blank Cartridges, 32 cal., \$3.50, 25¢  
 Blank Cartridges, 32 cal., \$3.50, 25¢  
 Blank Cartridges, 32 cal., \$3.5



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**Walloets.**  
Hickory.....20¢10¢20¢10¢10¢  
Lignum vitae.....20¢10¢20¢10¢10¢  
R. & L. Block Co., Hickory & L. V.  
H. & L. Block Co., Hickory & L. V.

**Measures.**  
Standard Fiberware, No. 1, peck, #  
dosen, \$4; 1/2-peck, \$3.50.  
**Meat Cutters—See Cutters, Meat.**

**Menders, Harness—**  
Per doz.....\$2.00

**Mills.**  
Coffee—

Box and Side, List Jan. 1, 1888.....60¢25¢  
American, Enterprise Mfg Co.20¢10¢30¢  
The Swift, Lane Bros.....30¢10¢

**Mining Knives—See Knives,**  
Mining.

**Molasses Gates—See Gates, Mo-**  
lasses.

**Money Drawers—See Drawers,**  
Money.

**Mowers, Lawn.**

Pennsylvania, New Model, Excelsior,  
Continental, &c.....60¢10¢25¢  
Philadelphia.....60¢10¢  
Perfection.....60¢10¢  
Easy.....60¢10¢60¢10¢25¢  
Other Machines.....60¢10¢30¢70¢

**Muzzles—**  
Safety.....# dos, \$3.00, 25¢

**Nails.**

Cut and Wire. See Trade Report.

Wire Nails, Papered.

Association list, July 15, '89, 75¢10¢80¢

Tack Mfrs.' list.....7¢70¢10¢

Wire Nails, Standard Penny.

Card June 1, '89, base.....\$2.20 @ \$2.30

**Horse.**

No. 6 7 8 9 10

Ausable.....25¢26¢25¢24¢23¢

Clinton, Pin. 19¢17¢16¢15¢14¢

Essex.....25¢26¢25¢24¢23¢

Lyra.....10¢17¢16¢15¢14¢

Shawden.....19¢17¢16¢15¢14¢

Putnam.....25¢21¢20¢19¢18¢

Vulcan.....1000 lb in year 15¢

Northwestern.....25¢23¢22¢21¢20¢

Globe.....23¢21¢20¢19¢18¢

Aston.....23¢21¢20¢19¢18¢

B. C.....25¢23¢22¢21¢20¢

C. B.-K.....25¢23¢22¢21¢20¢

Maud S.....25¢23¢22¢21¢20¢

Thamplain.....25¢23¢22¢21¢20¢

Saranac.....23¢21¢20¢19¢18¢

Champion.....25¢23¢22¢21¢20¢

Capewell.....25¢23¢22¢21¢20¢

Star.....23¢21¢20¢19¢18¢

Anchor.....23¢21¢20¢19¢18¢

Western.....23¢21¢20¢19¢18¢

Empire Bronzed.....14¢

**Picture.**

Brass Head, Sargent's list.....50¢10¢10¢

Brass Head, Combination list.....50¢10¢

Porcelain Head, Sargent's list.....50¢10¢10¢

Porcelain Head, Combination list.....40¢10¢

Siles' Patent.....40¢

**Nail Pullers—See Pullers, Nail.**

**Nail Sets—See Sets, Nail.**

**Nut Crackers—See Crackers, Nut.**

**Nuts—List Dec. 18, 1889.**

Square, Hex.

Hot Pressed.....5.40¢ 6.00¢ off list.

Cold Punched.....5.00¢ 5.10¢ off list.

In packages of 100 #, add 1-10¢ #, add

net; in packages less than 100 #, add

1/2¢ #, net.

**Oakum.**

Best or Government.....# 7¢71¢4

U. S. Navy.....# 6¢61¢6

Navy.....# 5¢59¢6

**Oilers.**

Zinc and Tin.....65¢10¢70¢

Brass and Copper.....60¢10¢50¢10¢5

Malleable, Hammers' Improved, No. 1,

25¢; No. 2, 24¢; No. 3, 24¢, 10¢ doz.

Malleable, Hammers, Old Pattern, same

**Padlocks—See Locks.**

**Pails.**

**Galvanized Iron—**

Quarts 10 12 14

Hill's Light Weight, # dos. \$2.75 3.00 3.25

Hill's Heavy Weight, # dos. 3.00 3.25 3.75

Holwig's.....2.50 2.75 3.00

Sidney Shepard & Co.....2.50 2.75 3.00

Iron Clad.....2.50 2.75 3.00

Fire Buckets.....2.75 3.25 3.50

Buckets, see Well Buckets.

**Indurated Fibre Ware—25¢**

Star Pails, 12 qt.....# dos \$5.40

Fire, Stable and Milk, 14 qt.....# dos \$7.80

**Standard Fibre Ware—**

Plain, Dec'd

Water Pails, 12 qt., per doz.....\$4.50

Dairy Pails, 14 qt., per doz.....4.50 5.00

Fire Pails, No. 1, 12 qt., per doz.....4.50

Fire Pails, No. 2, 14 qt., per doz.....5.00 6.50

Sugar Pails.....6.00 6.50

Horse Pails.....5.00

Buggy Pails.....4.00

Slop Jars (bat. trap).....8.00 9.00

Chamber Pails, 14-qt.....6.50 7.50

**Pans.**

**Dripping.**

Small sizes.....# 6¢4¢

Large sizes.....# 6¢4¢

Silver & Co. (Covered).....40¢

**Fry—**

Standard List:

No. 1 2 3 4 5

# dos. \$3.00 \$3.75 \$4.25 \$4.75 \$5.25

No. 6 7 8 9 10

# dos. \$6.00 \$7.00 \$8.00 \$9.00 \$10.00

Polished, regular goods.....75¢75¢10¢

Acme Fry Pans.....60¢10¢

**Dust—**

Steel Edge, No. 1.....# dos \$1.75

**Paper and Cloth—**

**Sand and Emery—**

List April 19, 1886.....50¢50¢10¢

Sibley's Emery and Crocus Cloth.....30¢

**Parers.**

**Apple.**

Advance.....# dos \$4.75

Baldwin.....# dos 5.25

Bonanza.....each 6.00

Dalay.....# dos 4.00

Dandy.....each 7.50

Eclipse.....# dos 4.25

Eureka, 1888.....each 10.00

Family Bay State.....# dos 12.00

Favorite.....# dos 6.00

Gold Medal.....# dos 4.00

Imperial Bay State.....# dos 27.00 30.00

Little Star.....# dos 4.50

Monarch.....# dos 18.50

New Lightning.....# dos 5.50

Oriole.....# dos 4.00

Penn.....# dos 4.00

Perfection.....# dos 4.00

Porona.....# dos 4.00

Rocking Table.....# dos 6.00

Turn Table.....# dos 4.50

Victor.....# dos 13.50

Waverly.....# dos 4.00

White Mountain.....# dos 4.00

73.....# dos 4.25

78.....# dos 7.00

White Mountain.....# dos \$4.50

Antrim Combination.....# dos \$5.50

Hosier.....# dos \$13.50

Saratoga.....# dos \$5.50

**Pencils—**

Faber's Carpenters'.....high list 50¢

Faber's Round Gilt.....# gro \$5.25

Dixon's Lead.....# gro \$4.50

Dixon's Lumber.....# gro \$6.75

Dixon's Carpenters'.....10¢

**Picks—**

Railroad or Adse Eye, 5 to 6, \$12.00;

6 to 7, \$13.00.....60¢10¢60¢10¢5¢

**Picture Nails—See Nails, Picture.**

**Pinking Irons—See Irons, Pinking.**

**Pins.**

**Bow—**

Humason, Beckley & Co.'s.....60¢10¢

Sargent & Co.'s.....\$17 and \$18.....60¢10¢

Peck, Stow & W Co., 50¢10¢50¢10¢25¢

**Curtain—**

Silvered Glass.....net

White Enamel.....net

**Excelsior—**

Iron, list Nov. 11, 1885.....50¢10¢50¢10¢5¢

Brass.....60¢60¢5¢

**Pipe, Wrought Iron—**

List September 18, 1889.

14 and under, Plain.....55¢

14 and under, Galvanized.....55¢

14 and over, Plain.....65¢

14 and over, Galvanized.....62¢5¢

Boiler Tubes.

Sizes up to 24 in. inclusive.....55¢

Sizes 3 to 6 in. inclusive.....65¢

Sizes 7 in. and up.....55¢

Casing.....55¢

**Planes and Plane Irons—**

**Wood Planes—**

Molding.....4¢10¢

Bevel, First Quality.....5¢10¢

Bevel, Second Quality.....5¢14¢

Bailey's (Stanley R. & L. Co.).....40¢10¢

**Iron Planes—**

Bailey's (Stanley R. & L. Co.).....40¢10¢10¢

Miscellaneous Planes (Stanley R. & L. Co.).....20¢10¢20¢10¢10¢

Victor Planes (Stanley R. & L. Co.).....20¢10¢20¢10¢10¢

Steel's Iron Planes.....35¢35¢10¢

Meriden Nat. Iron Co.'s.....40¢40¢10¢

Davis's Iron Planes.....40¢40¢10¢

Hirmingham Plane Co.....50¢50¢10¢

Gage Tool Co.'s Self-Setting.....30¢10¢10¢

Chapin's Iron Planes.....40¢40¢10¢

Standard Tool Co.....50¢10¢50¢10¢10¢

**Standard Tool Co.**

**Plane Irons—**

Butcher's.....\$5.00 \$5.25 to 2

Buck Bros.....30¢

Auburn "Thistle".....30¢

Ohio.....30¢10¢

Sandusky.....30¢

S. & I. J. White.....35¢

**Plates.**

Police.....# 6¢6¢4¢

**Pliers and Nippers—**

Button's Patent.....50¢50¢10¢

Hall's No. 2, 5 in., \$13.50; No. 4, 7 in.

\$21.00 # dos.....50¢10¢35¢

Hudson & Beckley Mfg. Co.....50¢50¢10¢

Lindsay's Giant.....40¢

Gas Pliers.....60¢

Gas Pliers, Custard's Nickel Plated.....60¢5¢

Eureka Pliers and Nippers.....40¢

Russell's Parallel.....25¢

P. S. & W. Cast Steel.....50¢

P. S. & W. Tanners' Cutting Nippers,

add 1/2 die 10¢

Carew's Pat. Wire Cutters.....30¢

Morrill's Parallel, # dos, \$12.00.....30¢5¢

Cronk's 8 in., \$16.00; 10 in. \$21.00,

40¢40¢5¢

**Plumbs and Levels—**

Regular List.....70¢10¢70¢10¢10¢

Diction's.....50¢

Pocket Levels.....70¢10¢70¢10¢10¢

Davis Iron Levels.....30¢

Davis' Inclinoimeters.....10¢10¢

**Poachers.**

**Egg.**

Buffalo Steam Egg Poachers, # dos, No.

1, \$6.00; No. 2, \$9.00.....25¢

Silver & Co., 6-Ring.....# dos \$4; 5-Ring \$2

**Poken, Animal—**

Bishop's I. X. L.....# dos \$6.00

Bishop's O. K.....# dos \$5.25

Bishop's Pioneer.....# dos \$3.75

Bishop's American.....# dos \$2.75

Eagle, Double Stale.....# dos \$5.75

Eagle, Single Stale.....# dos \$3.75

Buckeye, Single Stale.....# dos \$2.75

**Police Goods.**

**Hack Saws—**  
Griffin's, complete.....40&10&50  
Griffin's Hack Saw, Blades.....40&10&50  
Star Hack Saws and Blades.....25  
Bureka and Crescent.....25

**Scroll—**  
Lester, complete, \$10.00.....25  
Rogers, complete, \$4.00.....25  
Barnes' Builders' and Cabinet Makers', \$15.....25  
Barnes' Scroll Saw Blades.....35

**Saw Frames—See Frames, Saw.**

**Saw Sets—See Sets, Saw.**

**Saw Tools—See Tools, Saw.**

**Scales—**

Hatch, Counter, No. 171, good quality, \$21.00  
Hatch, Tea, No. 161.....\$20.75  
Union Platform, Plain.....\$21.00  
Union Platform, Striped.....\$21.00  
Chattillon's Grocers' Trip Scales.....50  
Chattillon's Bureka.....25  
Chattillon's Favorite.....40  
Family, Turnbulla.....30  
Hieble Bros.' Platform.....40

**Scale Beams—See Beams, Scale.**

**Scissors, Fluting.....45**

**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.) \$6.50.....30  
Box, 1 Handle.....\$4.00  
Box, 2 Handle.....\$4.00  
Defiance Box and Ship.....\$4.00  
Foot.....\$4.00  
Ship, Common.....\$3.50  
Ship, R. I. Tool Co.....10

**Screen Window and Door Frames—See Frames.**

**Screw Drivers—See Drivers, Screw.**

**Screws.**

**Bench and Hand—**

Bench, Iron.....55  
Bench, Wood, Beech.....\$2.25  
Bench, Wood, Hickory.....20  
Hand, Wood.....20  
Lag, Blunt Point, List Jan. 1, 1890, 75&105  
Coach and Lag, Gimlet Point, List Jan. 1, 1890.....75  
Bed.....25  
Hand Rail, Sargent's.....60  
Hand Rail, R. & P. Mfg. Co.....70  
Hand Rail, Am. Screw Co.....50  
Jack Screws, Millers Falls List.....75  
Jack Screws, P. S. & W.....35  
Jack Screws, Sargent's.....60  
Jack Screws, Stearns'.....40

**Cork—**

Humason & Beckley Mfg. Co.....40  
Williamson's.....35  
Howe Bros. & Hulbert.....35

**Machine—**

Flat Head, Iron.....55

Round Head, Iron.....50

**Wood—**

List January 1, 1891.

Flat Head Iron.....72

Round Head Iron.....72

Flat Head Brass.....72

Round Head Brass.....72

Flat Head Bronze.....72

Round Head Bronze.....72

Rogers' Drive Screws.....85

**Scroll Saws—See Saws, Scroll.**

**Scythes.**

Grain.....40

Gram.....40

**Scythe Snaths—See Snaths, Scythe.**

**Snaths.**

**Steel and Tool.**

Aiken's Sets, A.W. and Tools, No. 20, \$10.00.....55

Fray's Adj. Tool Hds., Nos. 1, 112, 2, 118, 3, 112, 4, 112.....25

Miller's Falls Adj. Tool Hds., Nos. 1, 112, 2, 118.....25

Henry's Combination Haft.....\$3.50

Brad Sets, No. 45, \$10.50; No. 48, \$12.50.....70

Stanley's Excelsior, No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....30

**Naif—**

Square.....\$7.40

Round.....\$7.40

Buck Prod.....\$7.40

Cannon's Diamond Point.....\$7.40

**Effect.**

Regular List.....50

**Saw—**

Stillman's Genuine.....\$5.00

Stillman's Imita.....\$5.00

Common Lever.....\$5.00

Morrill's No. 1, \$15.00; Nos. 3&4, \$34.00.....40

Leach's, No. 0, \$3.99; No. 1, \$15.00; No. 2, \$15.00.....40

Nash's.....\$10.00

Hammer, Hotchkiss.....\$5.50

Hammer, Bemis & Call Co.'s new Pat. 30&34.....30

Bemis & Call Co.'s Lever and Spring Hammer.....30

Bemis & Call Co.'s Flat.....10

Bemis & Call Co.'s Cross Cut.....10

Aiken's Genuine.....\$13.00

Aiken's Imitation.....\$7.00

Hart's Pat. Lever.....20

Shaker's Star.....25

Leopold.....40

Atkin's Lever.....\$1.00

Atkin's Critter.....\$1.00

Croissant (Keller), No. 1, \$15.00; No. 2, \$15.00.....40

Avery's Saw Set and Punch.....50

Chertman H. R. Co.'s Superior.....\$15.00

Crescent.....\$3.00

**Sharpeners, Knife.**

Parkins.

Applewood Handles.....\$2.00

Rosewood or Cocobolo.....\$2.00

**Shaves, Spoke.**

Iron.....45  
Wood.....20  
Bally's (Stanley R. & L. Co.).....40  
Stearns'.....30  
Cincinnati.....35  
Goodell's, \$ doz \$9.00.....25

**Shears—**

American (Cast) Iron.....75  
Barnard's Lamp Trimmers.....\$3.75  
Tinners'.....20  
Seymour's, List, Dec. 1891.....60

Heinrich's, List, Dec. 1891.....60

Heinrich's Tailor's Shears.....35

Cast Steel Trimmers.....30

First quality.....80

Second quality.....80

Acme Cast Shears.....10

Diamond Cast Shears.....10

Clipper.....10

Victor Cast Shears.....75

Howe Bros. & Hulbert, Solid Forged Steel.....40

Chicago Drop Forge & F. Co., Solid Steel Forged.....40

Davenport Cutlery Co.....60

Claude Shear Co., Japaned.....70

Claude Shear Co., Nickel, same list. 60

Galvanic, 3/4 to 9 in, \$ doz, \$1.00 per inch

**Pruning Shears and Hooks.**

Diston's Combined Pruning Hook and Saw.....\$12.00

Diston's Pruning Hook, \$ doz \$12.00.....20

E. S. Lee & Co.'s Pruning Tools.....40

Pruning Shears, Henry's Pat. \$ doz \$3.75.....40

Henry's Pruning Shears, \$ doz \$4.25.....40

Wheeler, M. & C. Co.'s Combination, \$ doz \$12.00.....20

Dunlap's Saw and Chisel, \$ doz \$8.50.....30

J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25

P. S. & W. Co.....60

**Tinners', etc—**

Shears and Snips (P. S. & W.).....30

Snips, J. Mallinson & Co.....35

**Sheaves—**

**Sliding Door—**

M. W. Co., List July, 1888.....50

R. & E., List Dec. 18, 1885.....55

Corbin's List.....60

Patent Roller.....60

Patent Roller, Haidfield's, List Dec. 1885.....75

Russell's Anti-Friction, List Dec. 1885.....60

Moore's Anti-Friction.....60

**Sliding Shutter—**

R. & E. List Dec. 18, 1885.....60

Sargent's List.....60

Reading List.....60

**Shells—**

First quality 4, 8, 10 and 12 gauge.....25

First quality, 14, 16 and 20 gauge (\$10 list).....30

Price.....40

Star, Club, Rival and Climax.....35

Setbold's Comb. Shot Shells.....15

Brass Shot Shells, 1st quality.....60

Brass Shot Shells, Club, Rival, Climax.....65

**Shells Loaded—**

Standard List, July 19, 1890.....40

**Ship Tools—**

L. & J. White.....30

**Sheets, Horse, Mule, &c.—**

Burden's, Perkins', Phoenix and Bryden's Boss at factory.....40

Bryden's Frog Pressure, at factory.....45

**Mule—**

Add \$1 per keg to above prices.

**Or, Wrought—**

Ton lots.....\$2.00

1000 lb lots.....\$2.00

500 lb lots.....\$2.00

**Shot—**

Drop, up to BB, 25-b bag.....\$1.47

Drop, up to BB, 5-b bag......35

Drop, BB and larger, 25-b bag.....1.67

Drop, BB and larger 5-b bag......40

Buck and Chilled, 25-b bag.....1.67

Buck and Chilled, 5-b bag......40

Dust Shot, 25-b bag.....2.00

Dust Shot, 5-b bag......45

**Shovels and Spades—**

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20

Nov. 1—Jobbers frequently give 50% off extra on above.....50

Griffith's Black Iron.....50

Griffith's C. S. R. H. Goods.....30

St. Louis Shovel Co.....30

Hussey, Binns & Co.....30

Hubbard & Co.....30

Lehigh Mfg. Co.....30

H. M. Myers Co.....30

Payne Pettibone & Son.....30

Remington's (Lowman's Pat.).....40

Rowland's, Black Iron.....50

Rowland's Steel.....60

**Shovels and Tongs—**

Iron Head.....60

Brass Head.....60

**Sieves—**

Mann's Tin Rim.....50

Buffalo Metallic, S. & Co.....35

Shaker's Pat. Flour Sifters.....\$2.00

Electric.....\$2.00

Electric.....\$2.00

Hunter's.....\$2.00

Smith's adjustable Sifters.....\$2.00

Smith's Adjustable Milk Strainer.....\$2.00

Smith's Adjustable T. & C. Strainer.....\$2.00

**Sieves, Wooden Rim—**

Mesh 18, Nested, \$ doz.....\$1.00

Mesh 20, Nested, \$ doz......95

Mesh 24, Nested, \$ doz.....\$1.15

**Skains, Thimble—**

Western List.....75

Columbus Wrt. Steel, Special net prices.....60

Coldbrookdale Iron Co.....60

Seneca Falls Pattern.....60

Utica P. S. T. Skains.....60

Utica Turned and Pitted.....35

**Slates—**

School, by case.....50

**Snaps, Harness, &c.—**

Anchor (T. & M. Mfg. Co.).....65

Fitch's (Bristol).....60

Hotchkiss.....10

Andrews.....50

Sargent's Patent Guarded.....70

Serman, new list.....60

Covert, New Patent.....60

Covert, New R. E.....60

Covered Spring.....60

**Snaths, Scythe.**

List.....60

**Soldering Irons—See Irons, Soldering.**

**Spittoons, Cuspidors, &c.**

**Standard Fiberglass—**

Cuspidors, 3/4-inch, No. 5, \$8; No. 6, \$9.....35

Spittoons, Dally, 3-inch, No. 1, \$4; 10 and 11 inch, \$6.....35

**Spoke Shaves—See Shaves, Spoke.**

**Spoke Trimmers—See Trimmers, Spoke.**

**Spoons and Forks—**

**Tinned Iron—**

Basting, Cen. Stamp, Co.'s list.....70

Solid Table and Tea, Cen. Stamp, Co.'s list.....70

Buffalo S. & Co.....35

**Silver-Plated—(4 mos. or 55 cash 30 days)**

Meriden Brit. Co., Rogers.....40

C. Rogers & Bros.....40

Rogers & Bro.....40

Reed & Barton.....40

Wm. Rogers Mfg. Co.....40

Stimpson, Hall, Miller & Co.....40

Holmes & Edwards Silver Co.....40

L. Boardman & Son.....50

**Miscellaneous.**

Holmes & Edwards Silver Co.....50

No. 67 Mexican Silver.....50

No. 80 Silver Metal.....50

No. 24 German Silver.....50

No. 25 Nickel Silver.....50

No. 49 Nickel Silver.....50

Wm. Rogers Mfg. Co.....50

Rogers' Silver Metal.....50

18% Rogers' German Silver.....50

22% Rogers' Nickel Silver.....50

German Silver.....50

German Silver, Hall & Eiton.....50



<b>Thimble Skeins—See Skeins.</b>	
<b>Ties, Bale—Steel</b>	
Standard Wire, list.....	50@10@25
<b>Tinners' Shears, &amp;c.—See Shears, Tinners', &amp;c.</b>	
<b>Tinware—</b>	
Stamped, Japanned and Piced, list Jan. 30 1887.....	70@10@70@10@25
<b>Tire Benders, Upsetters, &amp;c.—See Benders and Upsetters, Tire.</b>	
<b>Tools.</b>	
<b>Coopers'—</b>	
Bradley's.....	20
Barton's.....	30@20@25
L. & J. White.....	30@25
Albertson Mfg. Co.....	25
Beatty's.....	30
Sandusky Tool Co.....	30@30@25
Shaves, Cincinnati Tool Co.....	30
<b>Lumber.</b>	
Ring Peavies, "Blue Line".....	12 ft. \$20.00
Ring Peavies, Common.....	12 ft. \$18.00
Steel Socket Peavies.....	12 ft. \$21.00
Mail Iron Socket Peavies.....	12 ft. \$19.00
Can Hooks, "Blue Line".....	12 ft. \$14.00
Can Hooks, Common Finish.....	12 ft. \$14.00
Can Hooks, Mail, Socket Clasp, "Blue Line" Finish.....	12 ft. \$14.00
Can Hooks, Mail, Socket Clasp, Common Finish.....	12 ft. \$14.50
Can Hooks, Clip Clasp, "Blue Line" Finish.....	12 ft. \$14.00
Can Hooks, Clip Clasp, Common Finish.....	12 ft. \$12.00
Hand Spikes.....	8 ft. \$15.00; 10 ft. \$16.00; 12 ft. \$17.00
Pike Poles, Pike & Hook.....	12 ft. \$11.50; 14 ft. \$12.50; 16 ft. \$14.50; 18 ft. \$17.50; 20 ft. \$21.50
Pike Poles, Pike only.....	12 ft. \$10.00; 14 ft. \$11.00; 16 ft. \$13.00; 18 ft. \$15.00; 20 ft. \$18.00
Pike Poles, not ironed.....	12 ft. \$6.00; 14 ft. \$7.00; 16 ft. \$8.00; 18 ft. \$12.00; 20 ft. \$16.00
Setting Poles.....	12 ft. \$15.00; 14 ft. \$16.00; 16 ft. \$17.00
Swamp Hooks.....	12 ft. \$18.00
<b>Saw.</b>	
Atkins' Perfection.....	12 ft. \$12.00
Atkins' Excelsior.....	12 ft. \$6.00
Atkins' Giant.....	12 ft. \$4.00
<b>Tobacco Cutters—See Cutters, Tobacco.</b>	
<b>Transom Lifters—See Lifters, Transom.</b>	
<b>Traps—</b>	
<b>Game—</b>	
Newhouse.....	40@40@25
Onida Pattern.....	70@10
Game, Blake's Patent.....	40@10@25
<b>Moose and Cat—</b>	
Moose Wood Choker.....	12 ft. \$12.00
Moose, Round Wire.....	12 ft. \$15.00; 14 ft. \$16.00; 16 ft. \$17.00; 18 ft. \$18.00; 20 ft. \$19.00
Moose, Cage Wire.....	12 ft. \$25.00; 14 ft. \$26.00; 16 ft. \$27.00; 18 ft. \$28.00; 20 ft. \$29.00
Moose, Catch-em-alive.....	12 ft. \$25.00; 14 ft. \$26.00; 16 ft. \$27.00; 18 ft. \$28.00; 20 ft. \$29.00
Moose, Bonanza.....	12 ft. \$20.00; 14 ft. \$21.00; 16 ft. \$22.00; 18 ft. \$23.00; 20 ft. \$24.00
Rat, Decoy.....	12 ft. \$10.00; 14 ft. \$11.00; 16 ft. \$12.00; 18 ft. \$13.00; 20 ft. \$14.00
Ideal.....	12 ft. \$10.00; 14 ft. \$11.00; 16 ft. \$12.00; 18 ft. \$13.00; 20 ft. \$14.00
Cyclone.....	12 ft. \$5.25
Hotchkiss Metallic Mouse, 5-hole traps.....	12 ft. \$5.00; 14 ft. \$5.50; 16 ft. \$6.00; 18 ft. \$6.50; 20 ft. \$7.00
Hotchkiss Imp. Rat Killer.....	12 ft. \$13.50
Hotchkiss New Rat Killer.....	12 ft. \$16.50
Schuyler's Rat Killer.....	12 ft. \$16.00

<b>Triers—</b>	
<b>Butter and cheese.....</b>	
<b>Trimmers, Spoke.</b>	
Bonney's.....	100
Stearns.....	100
Ives, No. 1, \$15.00; No. 2, \$12.00.....	100
Douglas.....	100
Cincinnati.....	100
<b>Trowels—</b>	
<b>Lothrop's Brick and Plastering.</b>	
Reed's Brick and Plastering.....	100
Diaton's Br'k and Plastering.....	100
Peace's Plastering.....	100
Clement & Maynard's.....	100
Rose's Brick.....	100
Brade's Brick.....	100
Worral's Brick and Plastering.....	100
Gordon.....	100
<b>Trucks, Warehouse, &amp;c.—</b>	
R. & L. Block Co's list, '82.....	40
<b>Tubes, Boiler—</b>	
<b>See Pipe.</b>	
<b>Twine—</b>	
Flax Twine.....	BC. B.
No. 9, 1/4 and 1/2 Balls.....	20 34
No. 12, 1/4 and 1/2 Balls.....	30 38
No. 15, 1/4 and 1/2 Balls.....	32 38
No. 24, 1/4 and 1/2 Balls.....	32 38
No. 36, 1/4 and 1/2 Balls.....	30 31
No. 204, Matras, 1/4 and 1/2 Balls.....	52 54
Chalk Line, Cotton, 1/4 Balls.....	25
Mason Line, Linen, 1/4 Balls.....	55
2-Ply Hemp, 1/4 and 1/2 Balls (Spring Twine).....	15 18
2-Ply Hemp, 1/4 Balls.....	16 18
2-Ply Hemp, 1/2 Balls.....	15 18
Cotton Wrapping, 5 Balls to 1.....	15 18
2, 3, 4 and 5-Ply Jute, 1/4 Balls.....	10 12
Wool.....	10 12
Paper.....	10 12
Cotton Mops, 6, 9, 12 and 16 to do.....	15
<b>Vises—</b>	
Solid Box.....	50@10@50@10@25
<b>Parallels—</b>	
Fisher & Norris Double Screw.....	15@10
Stephens.....	25@10
Parker's.....	30@25
Wilson's.....	55
Howard's.....	40
Bonney's.....	40@10
Millers Falls.....	40@10
Trenton.....	40@10
Merrill's.....	15@10
Sargent's.....	40@10
Backus and Union.....	40
Double Screw Leg.....	15@10
Prentiss.....	30@25
Simpson's Adjustable.....	40
Moore's.....	30
Massey Quick Action.....	30 @ 25
<b>Saw Vises—</b>	
Bonney's, Nos. 2 & 3, \$15.00.....	40@10
Stearns.....	35@10
Sargent's.....	60@10
Reading.....	12 15
Wentworth.....	30@10
<b>Miscellaneous.</b>	
Combination Hand Vises.....	12 ft. \$42.00
Cowell Hand Vise.....	30
Barnes' Pipe Vise.....	12 14
Cincinnati.....	35@10
Enterprise Pipe Vise, each.....	33.00
Massey Combination Pipe.....	40

<b>Wads—Price per M.</b>	
O.M.C. & W.R.A.—R.E., 11 up.....	68
O.M.C. & W.R.A.—R.E., 9@10.....	82
O.M.C. & W.R.A.—R.E., 8.....	96
O.M.C. & W.R.A.—R.E., 7.....	110
O.M.C. & W.R.A.—P.E., 11 up.....	115
O.M.C. & W.R.A.—P.E., 9@10.....	150
O.M.C. & W.R.A.—P.E., 8.....	170
O.M.C. & W.R.A.—P.E., 7.....	180
Slip's B. E., 11 up.....	1.70@1.75
Slip's P. E., 11 up.....	3.00@3.25
<b>Wagon Boxes—See Boxes, Wagon.</b>	
<b>Washer Cutters—See Cutters, Washer.</b>	
<b>Wagon Jacks—See Jacks, Wagon.</b>	
<b>Ware, Hollow, Enameled, &amp;c.</b>	
<b>Cast Iron, Hollow—</b>	
Stove Hollow-Ware.....	60@10
Ground.....	60@10
Unground.....	60@10
White Enameled-Ware.....	70@10@70@10@25
Boilers and Saucepans.....	50@10@05
Tinned Boilers and Saucepans.....	50@10@05
Enamel Hollow-Ware.....	50@50@25
Gray Enameled-Ware.....	50
Stove.....	60@10
Maslin Kettles.....	60@10
Boilers and Saucepans.....	40@25
<b>Enameled—</b>	
Agate and Granite Ware, list Jan. 1, 1889.....	35@10
Ironclad Enameled Ware.....	dis 35@10
<b>Kettles—</b>	
Galvanized Tea-Kettles.....	8 9
Inch.....	5 7
Each.....	60 70
<b>Standard Fiber—</b>	
Per Dozen.	Plain. Dec'd
Wash-Basins, 10 1/2 in.....	\$2.00 \$2.25
Wash-Basins, 12 in.....	2.25 2.75
Eclects, 11 1/2 in.....	2.00 2.40
Cupboards.....	4.00 4.50
Spittoons, "Daisy," 8 in.....	4.00 4.50
Peck Measure.....	4.00
Half-Peck Measure.....	3.50
<b>See also Falls.</b>	
<b>Indurated Fiber—25%</b>	
Spittoons, No. 2, 7 dos.....	\$9.00
Basins, Ringed, 7 dos, No. 2.....	\$3.00
Washbubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), 7 nest.....	\$7.50
Eclects, Nested, Nos. 1, 2, 3 and 4 (4 pieces), 7 nest.....	\$3.70
Butter Bowls 16, 17 and 19-inch (3 pieces), 7 nest.....	\$3.25
Liquid Measures, pt., qt., 1/2 qt. and funnel (4 pieces), 7 set.....	\$3.00
<b>See also Falls.</b>	
<b>Sliver Plated, Hollow—</b>	
4 mo. or 5 1/2 cash in 30 days.	
Reed & Barton.....	40@25
Meriden Britannia Co.....	40@25
Simpson, Hall, Miller & Co.....	40@25
Rogers & Brother.....	40@25
Hardford Silver Plate Co.....	40@25
William Rogers Mfg. Co.....	40@25
<b>Washers—</b>	
Size hole.....	5-16 1/4 1/2 3/4 1 1 1/2
Washers.....	5 5 3.50 3
In lots less than 200 B. & B. add 1/4, 5-3 boxes 1/2 to list.	
<b>Wedges—</b>	
Iron.....	7 @ 3 1/2
Steel.....	7 @ 3 1/2
<b>Weights, Sash—</b>	
Solid Eyes.....	7 ton \$18@19

<b>Well Buckets, Galvanized—See Buckets, Well, Galvanized.</b>	
<b>Wheels, Well.</b>	
8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25	
<b>Wire and Wire Goods—</b>	
<b>Iron—</b>	
<b>Market.</b>	
Br. & Ann., Nos. 0 to 18.....	77 1/2
Cop'd, Nos. 0 to 18.....	75
Galv., Nos. 0 to 18.....	67 1/2
Tin'd, Tinned list Nos. 0 to 18.....	67 1/2
<b>Br. &amp; Ann'd, Nos. 19 to 21.....</b>	
Bright and Ann'd, Nos. 19 to 21.....	77 1/2
Br. & Ann'd, Nos. 27 to 36.....	82 1/2
<b>Tinned Broom Wire, 18 to 21, 9.....</b>	
Galvanized Fence, Nos. 8 and 9.....	70
Brass, list Jan. 18, 1884.....	35
Copper, list Jan. 18, 1884.....	35
Barb Fence.....	See Trade Report
Annealed Wire on Spools.....	55
Malin's Steel and Tin'd on Spools.....	55
Malin's Brass and Con. on Spools.....	55
Tate's Spooled, Tinned and Annealed.....	55
Tate's Spooled Cop. and Brass.....	45
Cast Steel Wire.....	60
Stub's Steel Wire.....	\$6.00 to \$ 30
Steel Music Wire, 12 to 30.....	60@70
Wire Clothes Lines, see Lines.	
Wire Picture Cord see cord.	
<b>Bright Wire Goods—</b>	
Standard list.....	80@10
<b>Wire Cloth and Netting.</b>	
Painted Screen Cloth, good quality, 100 sq. ft., \$1.40	
Galvanized Wire Netting.....	70@10@75
<b>Wire Rope—See Rope, Wire.</b>	
<b>Wrenches—</b>	
American Adjustable.....	40
Baxter's Adjustable "S".....	40@10@50
Baxter's Diagonal.....	40@10@50
Coe's Genuine.....	50@25
Coe's "Mechanics".....	60@10@25
Girard Standard.....	55@10
Lamson & Sessions' Engineers.....	60@10
Lamson & Sessions' Standard.....	70@10
P. S. & W. Agricultural.....	75@10@75
Girard Agricultural.....	10@25
Lamson & Sessions' Agric'l.....	10@25
Bemis & Call's.....	25
Pat. Combination.....	25
Merrick's Pattern.....	25
Brigg's Pattern.....	25
Cylinder or Gas Pipe.....	40@25
No. 3 Pipe.....	40@10
Alken's Pocket (Bright).....	\$6.00, 50@10
The Favorite Pocket.....	7 dos \$4.00, 40
Webster's Pat. Combination.....	25
Boardman's.....	50@10
Always Ready.....	35@25
Aligator.....	50
Donohue's Engineer.....	30@10
Acme, Bright.....	50@25
Acme, Nickel.....	40@25
Hercules.....	70
Walker's.....	55@25
Diamond Steel.....	55@25
Cincinnati Brace & Wrench.....	55@25
Taft's Vise Wrench.....	55@10@25
<b>Wringers, Clothes—</b>	
Am. Wringer Co's list, July 15, 91.....	\$ 3 cash
<b>Wrought Goods—</b>	
Staples, Hooks, &c., list Jan. 12, 1886.....	55@85@10

## PAINTS, OILS AND COLORS.—Wholesale Prices.

### Animal and Vegetable Oils.

Linsed, City, raw, per gal.	42	44
Linsed, City, boiled.....	45	46
Linsed, Western, raw.....	38	40
Lard, City, Extra Winter.....	54	55
Lard, City, Prime.....	53	54
Lard, City, Extra No. 1.....	42 1/2	45
Lard, City, No. 1.....	37 1/2	40
Lard, Western, prime.....	52	53
Cotton-seed, Crude, prime.....	30	30
Cotton-seed, Crude, off grades.....	25	25
Cotton-seed, Summer Yellow, prime.....	37	38
Cotton-seed, Summer Yellow, off grades.....	32	33
Sperm, Crude.....	71	72
Sperm, Natural Spring.....	71	72
Sperm, Bleached Spring.....	73	74
Sperm, Natural Winter.....	73	75
Sperm, Bleached Winter.....	75	80
Whale, Crude.....	54	55
Whale, Natural Winter.....	54	55
Whale, Bleached Winter.....	56	58
Whale, Extra Bleached.....	58	60
Sea Elephant, Bleached Winter.....	63	64
Menhaden, Crude, Southern.....	30	30
Menhaden, Light Pressed.....	31	32
Menhaden, Bleached Wter.....	33	34
Menhaden, Extra Bleached.....	35	36
Tallow, City, prime.....	43	44
Tallow, Western, prime.....	43	44
Cocunut, Ceylon.....	64	7
Cocunut, Cochiti.....	74	7
Cod, Domestic.....	31	33
Cod, Foreign.....	30	32
Red Elaine.....	30	32
Red Saponified.....	5	5 1/2
Bank.....per gal	29	30
Strait.....	30	32
Olive, Italian, bbls.....	60	65
Nutsfoot, prime.....	55	65
Palm, prime, Lagos.....	5	5 1/2
<b>Mineral Oils.</b>		
Black, 35 gravity, 25 @ 30 cold test.....	7 1/2	8
Black, 30 gravity, 15 cold test.....	8 1/2	9
Black, 30 gravity, summer.....	8 1/2	9
Cylinder light, filtered.....	15	20

Cylinder, dark, filtered ....	13	15
Cylinder, dard, str'm refined .....	13	15
Paraffine, 25% @ 24 gravity.....	12 1/2	13
Paraffine, 25 gravity.....	9 1/2	10
Paraffine, red, 21 @ 22 grty.....	15	14
Paraffine, red, 22 @ 23 grty.....	15	14
<b>Paints and Colors.</b>		
Barytes, Foreign, 7 ton \$23.00.....	\$24.00	
Barytes, Amer. floated.....	20.00	\$22.00
Barytes, Amer. No. 1.....	19.00	\$20.00
Barytes, Amer. No. 2.....	15.00	\$16.00
Barytes, Amer. No. 3.....	11.00	\$12.00
Blue, Celestial.....	7	8
Blue, Chinese.....	50	55
Blue, Prussian.....	25	40
Blue, Ultramarine.....	8	25
Brown, Spanish.....	1 1/2	1
Brown, Vandyke, Amer.....	3	3 1/2
Brown, Vandyke, English.....	6	8
Carmine, No. 40, in bulk.....	5.10	..
Carmine, No. 40, in boxes or barrels.....	3.20	..
Carmine, No. 40, in ounce bottles.....	4.20	..
Chalk, in bulk..... 7 ton.....	..	2.00
Chalk, in bbls., 100 B.....	33	40
China Clay, English.....	10	15.00
Cobalt Oxide, prep'd.....	2.00	....
Cobalt Oxide, black..... lots 100 B.....	3.00	....
Cobalt Oxide, black..... less 100 B.....	2.65	....
Green, Paris, in bulk.....	14	15 1/2
Green, Paris, 170 @ 175 B.....	14 1/2	15 1/2
Green, Paris, small pack.....	16	21 1/2
Green, Chrome, ordinary.....	8	11
Green, Chrome, pure.....	23	25
Lead, Eng., B. B. white.....	8 1/2	10
Lead, Amn. White, dry in oil.....	7 1/2	
Kegs, lots less than 500 B.....	7	
Kegs, lots 500 B to 12 tons.....	6 1/2	
Kegs, lots 12 tons to 13 tons.....	6 1/4	
Lead White in oil 25 B tin balls.....	1	
Lead, White, in oil, 13 1/2 @ tin balls, add to kee prices.....	..	1

